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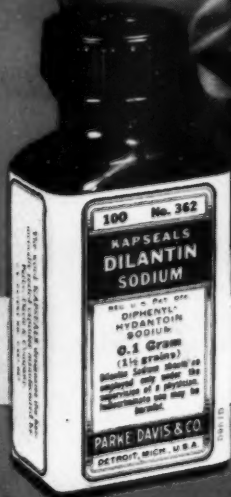
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Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 29

April, 1946

Number 4

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Volume 29

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CHOLECYSTECTOMY: ITS ORIGIN AND PRESENT STATUS

JUSTUS OHAGE, M.D.
Saint Paul, Minnesota

THIS year, 1946, marks the sixtieth anniversary of the first—and incidentally successful—cholecystectomy performed in the United States. The operation was done in this city, Saint Paul, Minnesota, at St. Joseph's Hospital.^{8,11} The date was September 24, 1886. I admit to a special interest in this operation and to the origins of cholecystectomy because the operator on this occasion was my father, Justus Ohage, assisted by Drs. Nelson, Schulin, Dedolph, Denny and Welsh, also of this city.

This year also marks the hundredth anniversary of the birth of the surgeon who performed the very first cholecystectomy.

Today cholecystectomy is a common—one might almost say routine—operation. It has been performed many thousands of times both in this country and abroad. Yet a little more than sixty years ago it was a question whether it could or should be done at all. It is interesting also to note that cholecystectomy has been a fairly stable operation. Except for general improvements in operative technique, especially with regard to asepsis, we are doing it today in much the same fashion that it was done by European and American surgeons who first attempted it.

I shall take this occasion, therefore, to recall for contemporary as well as historical interest the origins of cholecystectomy. While I do not pretend in any sense to be a historian of medicine, I am persuaded to the practical and useful aspects of medical history. The editors of the newly organized *Journal of the History of Medi-*

cine and Allied Sciences have written aptly in an introductory editorial:¹⁰

"The historical approach is invaluable in comprehending the nature of difficult problems. We must have a knowledge not only of the actions of the past, but of the mental struggles, the philosophical conflicts that preceded action."

From that approach I wish to review in some detail the early classical contributions to cholecystectomy and its forerunner, cholecystotomy.

Credit for performing the first successful removal of the gall bladder⁴ goes to the surgeon Carl Johann August Langenbuch⁶, the hundredth anniversary of whose birth occurs this year. Langenbuch was born in Kiel, Germany, in 1846. After graduation from the University of Kiel in 1869, he went to Berlin, where he began his career as an assistant in the Bethany Hospital. From 1873, until his death in 1901, he was an important figure at the Lazarus Hospital. He was a zealous worker in several fields and published much. To his name is attached the research which eventuated in nerve-stretching procedures in tabes. He also worked extensively in the study of diseases of the liver and gall bladder; his "Surgery of the Liver and Gall Bladder" was published in 1894. He was among the first who dared to resect a lobe of the liver. He dealt also with hydatids of the liver and the treatment of seriously exposed large blood vessels with zinc chloride paste. But we remember Langenbuch tonight as the first surgeon who successfully extirpated the gall bladder.

I quote now from Langenbuch's discussion and

⁸ Presidential Address before the Ramsey County Medical Society, Saint Paul, Minnesota, January 28, 1946.

description of this first successful case. This paper, in German, appeared in the *Berliner Klinische Wochenschrift* in 1882 under the title: "A Case of Extirpation of the Gall Bladder in the Treatment of Chronic Gallstones: Recovery."⁶ In passages that reflect the "mental struggles, the philosophic conflicts that precede action," Langenbuch writes:

"The surgery of the gall bladder is still in the infancy of its development, but it does exist and the names of Petit, Thudichum, M. Sims, Kocher, G. Brown, Lawson Tait, König and others are in a general way associated with it. Concerned with stone formation, they have until now gone only so far as exposing the gall bladder freely and have been satisfied to widen fistulas and extract stones whenever hydrops or empyema of the gall bladder call for an operation. . . . They have busied themselves with the product of the disease, not the disease itself."

Langenbuch himself first became seriously interested in the problem in 1874 when he encountered a particular case of a forty-year-old man with insidious gallstones. He was prompted to undertake a series of animal experiments which brought him to the conclusion that:

"Of all abdominal operations to which laparotomy is the prelude, extirpation of the gall bladder with preliminary ligation of the cystic duct appears among the least hazardous to attempt."

In June, 1882, shortly after the conclusion of his experiments, Langenbuch was called into consultation by Dr. N. Meyer to see a forty-three-year-old patient, Mr. D., a magistrate secretary in Berlin, who was suffering from acute gallstone disease. Langenbuch reports his history thus:

"He had endured his first mild attack in 1866, but recovered. Thereafter attacks came more frequently and jaundice increased. He had taken the cure at Carlsbad for three years without success. The first year he had weighed 89.5 kilograms, the next year 75 kilograms and now only 52.5 kilograms (126½ pounds). For the last nine months the recurrent pain was so intense that he had to be maintained on increasing doses of morphine. He was very depressed, he constantly complained, his strength was failing and without morphine he could not leave the house. He had to give up his employment and his future indeed looked black."

Langenbuch explained the risk and the possibilities of the projected operation, cholecystectomy, to the patient. On July 10, 1882, the patient entered the Lazarus Hospital and asked Langenbuch to undertake the operation. The pa-

tient was kept in bed for five days, during which time he suffered two acute exacerbations of pain.

The operation was scheduled for July 15, 1882, and did indeed take place on that day. "As demanded by the novelty of the case," writes Langenbuch, "preparations were made for carrying out the operation with all aseptic precautions." At this point we may recall that the modern era of surgery, introduced largely by Joseph Lister, was still very young and the distinction was not altogether clear between antiseptic surgery, employing carbolic acid dressings and spray, and aseptic surgery, emphasizing the exclusion of contaminating agents by the practice of absolute cleanliness. Lister's famous paper "On the Antiseptic Principle of the Practice of Surgery" had appeared only fifteen years previously, in 1867.

With aseptic precautions as they were understood in 1882, then, and with the assistance of Dr. A. Martin and Prof. Dr. F. Busch as well as the presence of other guests, Langenbuch began the first successful cholecystectomy. He has described the operation and its results as follows:

"The operation proceeded smoothly, through a T incision. The gall bladder was found to be massively full of gall and was emptied by aspiration with a syringe. Two chestnut size cholesterol gallstones were found. When the gall bladder was detached from the liver, a small venous bleeding occurred. This was controlled with a catgut stitch. . . .

"After the operation the patient felt no pain and slept well the following night. Next day his pulse and temperature were normal; he felt no pain and he smoked a cigar. He left his bed on July 27. His old pain had not recurred up to mid-November. He had gained 13 kilograms in weight and he no longer needed morphine."

At this time Langenbuch felt that he had answered the physiologic and technical questions concerning the feasibility of cholecystectomy in man. He wrote: "Clinically I believe we should be alert to extirpation of the gall bladder, with preliminary ligation of the cystic duct, as the least dangerous and most hopeful method for the relief of many pathological processes arising in these organs." Experience has justified his statement.

Within four years after Langenbuch's first cholecystectomy, the operation was performed nine times, with eight recoveries, a mortality rate of 11 per cent.⁹ The operation in this city, the first in the United States, was the ninth in the world. Five were performed by Prof. Langen-

buch, with one death, two by M. Thiriar, both successfully, one, successfully, by Courvoisier.

Obviously, however, cholecystectomy was not the only surgical procedure entertained for relief of diseases of the gall bladder. Its immediate predecessor was lithotomy. Credit for the first cholecystectomy for the removal of gallstones⁴ has been assigned to an American physician, John Stough Bobb² (1809-1870), who reported a case of lithotomy of the gall bladder in the Transactions of the Medical Society of Indiana for 1868. The operation of lithotomy for the removal of gallstones had been proposed in the 18th century by the French surgeon, Jean Louis Petit¹ (1674-1750), who lectured on surgery at Paris and devised many operations. He suggested that if the gall bladder was dilated and adherent to the abdominal wall, it might be punctured and stones extracted with a long forceps. Similarly, fistula might be dilated for this purpose. Vogel, a surgeon of Lübeck, is said to have performed this operation in the 18th century and considered it one of "the very finest surgical operations." Borrichus¹², in the 17th century, observing many fatal cases of "dropsy of the gall bladder" from impacted gallstones, had among others raised the question of surgical interference. Far earlier, in antiquity, Hippocrates and Galen gave descriptions of gallstones and diseases dependent on them.

However, the classical description of cholecystectomy and in fact the invention of this name for the operation itself is ascribed to James Marion Sims. Sims was an American, born in 1813 in South Carolina. He practiced in Alabama and New York. Sims was one of the early presidents of the American Medical Association (1876). He later moved to Europe where he was made an honorary fellow of the obstetrical societies of London, Dublin and Berlin. He died in 1883. His classical "Remarks on Cholecystectomy in Dropsy of the Gall Bladder"¹³ were published in the *British Medical Journal* in 1878.

In this paper Sims reports the case of an American woman, aged forty-five, a resident of Paris, on whom he performed the operation of cholecystectomy. The date was April 18, 1878. This patient had all the symptoms of acute mechanical obstruction of the gall bladder. She is described as being mahogany colored with jaundice. "The benefit of the operation," Sims reported, "was shown by immediate relief of pain, itching, nau-

sea, vomiting and in the production of stools natural in color and odor." Unfortunately, however, the patient died eight days after the operation, due to hemorrhage. Sims considered the operation nevertheless a "triumph for Listerism, for postmortem examination proved that there was not the least trace of peritonitis or other untoward complication to be found as a direct result of the operation."

In the course of the operation, under ether anesthesia, Sims amputated a portion of the gall bladder protruding through the incision. Apparently it did not occur to Sims to remove the entire gall bladder. Lacking Langenbuch's extensive studies he may have been extremely doubtful whether life was compatible with the absence of the gall bladder. At any rate he states: "It will be better to incise the gall bladder rather than to remove any portion of it."

I quote now a few pertinent statements from Sim's paper, again illustrating the "mental struggles, the philosophical conflicts that precede action" in the direction of gall-bladder surgery. Sims wrote:

"I believe the operation is unique. Is it justifiable? I think it is because it is an imitation of the process adopted by nature in all cases in which recovery takes place. Death is absolutely certain in every case where the gall ducts are mechanically obstructed unless an outlet be obtained either into the alimentary canal or by a fistulous opening externally through the abdominal wall. . . . But this case proves that it is not necessary to wait for the tedious efforts of nature. . . . Were I called on to operate again under similar circumstances I would not procrastinate it a day after the diagnosis was fully established. For it is certain that the longer it is put off, the more the blood becomes poisoned by the bile and the more the chances of recovery are diminished."

"It is too much the fashion, nowadays," wrote Sims in 1878, when Listerism was making possible operations that would have been considered absurd a few years previously, "to coin new names for old operations. But this is a new operation and we must find a name for it. Cholecystectomy (from the Greek, "gall," "bladder" and "incision") will answer." He rightly predicted that cholecystectomy would "open a great new field in the domain of abdominal surgery."

The first successful case of cholecystectomy with recovery, five weeks after operation, was performed by Kocher⁵ in June, 1878.

CHOLECYSTECTOMY—OHAGE

Experience over more than sixty years has now demonstrated that cholecystectomy as introduced by Langenbuch rather than cholecystotomy devised by Sims is the more useful and probably the less hazardous operation, though each has its place. Very recent statistical studies appear to bear this out. In a series of 332 cases of acute cholecystitis reviewed by B. C. Smith¹³ in 1945, cholecystectomy was performed on 223 patients with a mortality rate of 3.5 per cent, and cholecystotomy was performed on 103 patients with a mortality rate of 11.6 per cent. In another series of 123 cases of acute cholecystitis reviewed in 1945 to determine the comparative value of early (that is, within seventy-two hours) and late operative intervention, McGuigan⁷ concludes that when delay results in improvement of the condition of the patient, cholecystectomy is to be preferred to cholecystotomy and seems to be better borne than the less radical operation. The average mortality in this series was 12.7 per cent for the early operations; 2.38 per cent for the delayed operations.

In 1946, then, the year marking the sixtieth anniversary of the performance of the first cholecystectomy in the United States and the

hundredth anniversary of the birth of the surgeon who first performed this operation, we need conclude nothing more elaborate than to offer affirmative testimony that the earliest hopes as to the utility of this operation have been amply confirmed. Would that all surgical hopes were as fully justified.

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SOCIALIZE EVERYTHING OR NOTHING

On all sides one hears: Why does the medical profession oppose socialized medicine? Not all of the profession does. Those who do oppose it do so because they think, with good reason, that it will not work as well as the present system of practice *unless everything else and everybody else is "socialized" also*. Their good reason is the way it has failed to work well in countries where it has been tried.

There seems little cause to "socialize" medicine and to stop there. Free medicine is now working well, advancing, making progress, as everyone knows, in a free economy. Should we "socialize" medicine and not the patients? Should we "socialize" medicine and not the manufacturers who make the drugs, the appliances, the automobiles, the surgical instruments, the biologic products which medicine uses? And how about the labor unions whose members make the things that doctors need? Shall they be "socialized" also?

If this country is heading toward conversion to a socialist republic, we had better know about it. If it is true, as Lincoln said, that we cannot exist half slave, half free, it seems absurd to think we can exist half socialized, half free, no matter who says so. We paid the price of a civil war to settle the first question—what price this one? An answer to this seems called for.

In homely phrase, it's "whole hog or none." Medicine is only a tiny, if nubbly, minority of the electorate, probably not really worth the trouble to socialize—except as an experiment, a trial balloon so to speak. If it can be "socialized," if the acceptable political and other technics can be thus worked out as, for instance, they were in the "laboratory war" in Spain, then the other professions, as well as business and manufacture, can be subsequently "blitzed." Underneath the double talk lies the single objective.

Well, if it is to be that way, maybe we had better think about it. Things like the Wagner bills, the Pepper bill, E.M.I.C., are handy tools to toss into the machinery of a free economy. Perhaps nobody but the doctors will object to them—until it is too late. Seen against the background of the recent elections in Britain, the rising tide of socialist influence in Europe, the growing dominance of labor in American politics, it is not surprising that attempts should be made, under whatever guise, to convert this country to a socialist republic. Technics of boring from within established political parties are well known. Confusion in the popular mind between socialism, communism, democracy and republicanism has been worse confounded by attempts to explain their differences.

The first great American dependency was created following the panic of 1929. People learned to look to ever-loving government for their very existence in many cases. The myriad alphabetic agencies spring up with sprightly benevolence during the liberation period of Congress to assume the guardianship of the individual rights and privileges of the taxpayer-citizen in a difficult era, to be later superseded by the regulatory governmental mechanisms of the war years. Crisis followed serried crisis for some reason, lurid interagency civil war filled the citizen with respect for constituted authority as soon as he recovered from his nausea.

Now it is proposed to lure the voting taxpayer into forgetfulness by giving him ever-loving government medicine, "socialized" medicine. You don't believe it? Well, look at H.R. 3293 or S. 1050. Don't bother your congressman or senator to send you a copy of the bills. Don't you know there's a—peace on? Everything is lovely now.—Editorial, *New York State Journal of Medicine*, 45:2401, (Nov. 15) 1945.

ACUTE LESIONS OF THE ABDOMEN

Diagnosis and Treatment

ARNOLD S. JACKSON, M.D., F.A.C.S.

Madison, Wisconsin

WHEN attempting to establish a diagnosis in the case of a patient complaining of acute abdominal distress, one must consider many possible medical as well as surgical conditions.

Frequently the signs and symptoms are sufficiently clear to enable one to arrive quickly at a correct diagnosis. If the case is not typical, then by the process of elimination, by the assistance of laboratory tests, and by a careful study of the findings the nature of the disease may be determined. Often the problem is not solved until an exploratory operation has been performed, and then the pre-operative diagnosis may be proved incorrect.

Certain medical conditions may closely mimic surgical diseases of the abdomen, and one must guard against confusing the two. In children especially such diseases as acute pyelitis and pneumonia are apt to simulate appendicitis. A careful study of the lungs in an early case of pneumonia may fail to reveal any characteristic findings, and the child may only complain of abdominal pain. Elevation of the temperature and leukocyte count occur in both. There may be abdominal tenderness but seldom rigidity in pneumonia. The accessory muscles of respiration in the nose may be activated in acute pulmonary lesions. Repeated studies of the urine may show pus and, along with a high fever and chill, point to pyelitis.

Several months ago I performed a cholecystectomy on a woman thirty-eight years of age who had been under treatment for coronary disease for a considerable time. She had suffered repeated attacks of severe substernal pain radiating to the right arm. Electrocardiograph studies made by the patient's physician during and shortly after the attacks had apparently confirmed the diagnosis of coronary disease. It is a well-known fact, however, that acute biliary attacks may alter the electrocardiographic tracing so as to give the picture of coronary disease. Cholecystectomy was performed, a large number of stones were removed, and the patient entirely relieved of pain. To further confuse the problem, cholecystitis condi-

tions and coronary disease are occasionally associated.

Acute enteritis, commonly termed "intestinal flu," may so closely resemble acute appendicitis that it is impossible to establish a correct diagnosis without resorting to surgery. In a few instances an acute gangrenous appendix develops within twenty-four hours or less from the time of onset of an attack of acute enteritis. In children one may be greatly concerned as to the advisability of operation in certain of these cases. The past year there has been a very high incidence of acute enteritis, and still there is no solution as to its etiology. Years ago it seemed to occur in mild epidemic form during the summer months; more recently it appears to have no seasonal incidence.

Numerous other medical conditions, such as acute lead colic, tabetic crises, acute ruptured Graafian follicle, allergic disturbances, and gastrointestinal hemorrhage, may occasionally puzzle the diagnostician.

Among the more common surgical diseases there are: appendicitis, cholecystitis, pancreatitis, mesenteric thrombosis, perforated ulcer, traumatic lesions, intestinal obstruction (including volvulus, intussusception, strangulated hernia and neoplasms), torsions of the omentum, regional enteritis, and congenital anomalies. Then, too, acute lesions of the pelvis, such as ruptured tubal pregnancy, strangulated and ruptured ovarian cysts, acute salpingitis and rupture of the uterus must be considered. Likewise a number of lesions of the genito-urinary tract, as renal and ureteral calculi and pyelitis, may confuse the examiner.

Acute Perforated Ulcer

The appearance of the patient may afford some help in arriving at a correct diagnosis. In the case of an acute perforated ulcer, he may sit up in bed with his knees drawn up, finding it too painful to lie down. He may be suffering severe pain, requiring morphine for relief. This, of course, should not be given until the diagnosis is fairly definitely determined. He may give a history of an ulcer with a sudden onset of a gun-

Expansion of address before the Saint Paul Surgical Society, January 17, 1945.

shot type of pain following some dietary indiscretion such as drinking beer on an empty stomach. The development of a boardlike rigidity of the abdomen within an hour or two of the onset and the finding of a gas bubble under the diaphragm by x-ray confirm the diagnosis and call for immediate operation.

The abdomen is opened preferably under spinal anesthesia. The perforation is located and closed by three or more interrupted chromic sutures and covered by an omental tag, if possible, and 10 Gm. of sulfathiazole in saline is left in the peritoneal cavity after its soiled contents have been aspirated. I have been closing the abdomen without drainage in patients operated upon within twelve hours of perforation. Duodenal suction and intravenous glucose and saline are used as indicated.

Acute Pancreatitis

Acute pancreatitis is fortunately of rare occurrence as it is usually fatal. Its onset is characterized by a severe upper abdominal pain, shock, prostration, high fever, and high leukocyte count. Surgery has never proved very successful.

On opening the abdomen in a recent case, we found the typical condition of acute pancreatitis with free fat in the peritoneal cavity and a huge hemorrhagic pancreas. We followed the accepted procedure of placing drains to the pancreas, but the case terminated in the usual manner, despite penicillin and sulfonamide therapy. Some internists advocate medical treatment of acute pancreatitis after a diagnosis has been established by the amylase test.

Acute Cholecystitis

Two schools of thought have existed among the surgeons of this country regarding the treatment of acute cholecystitis. Some advocate immediate operation, and others favor a more conservative treatment and delayed operation. It is my belief that no set rule can be used but that each case must be treated according to the duration, severity, and progress of the disease. If the toxemia is subsiding, I prefer to wait a few days and then operate. If the fever and leukocyte count are rising, indicating the development of empyema, delay in operating may only lead to further complications.

As a rule, acute cholecystitis does not offer a difficult problem in diagnosis. The symptoms are usually confined to the right upper quadrant and may consist of a steady severe pain or attacks of

colic, with a fever of 102 F. or higher and a high leukocyte count often of 15,000 to 25,000. If empyema develops, a chill may occur. There is localized rigidity and marked tenderness. The pain may remain localized or be referred to the right scapular region and usually requires morphine for relief.

In the elderly and the greatly debilitated, including those who suffer a severe toxemia, drainage rather than removal of the gall bladder may be the safer surgical procedure. Also, in the presence of a marked inflammatory reaction that has involved the ducts and obscured the anatomy, cholecystostomy may prove a wise choice. Otherwise, we prefer to do a cholecystectomy, working from the ducts upward. A small drain is removed after five days. For the past two years we have had our patients out of bed in most instances after twenty-four hours and walking after the second postoperative day. We have reduced the use of duodenal suction and intravenous fluids, believing that early ambulation, by stimulating peristalsis and the circulation, has permitted the patient better to tolerate oral feeding and to maintain normal digestion and that speedier healing of the wound has resulted.

Intestinal Obstruction

The surgical mortality of this condition for years was listed as close to 50 per cent by many of our leading hospitals. Improved methods of diagnosis, a better understanding of the principles of the treatment involved, and earlier operations have considerably lowered the surgical mortality in the past few years.

In any acute abdominal complaint a careful search should be made for the presence of operative scars. An operation performed many years previous for a ruptured appendix may be the cause of an acute intestinal obstruction. Failure to carefully peritonize the cervical stump following a subtotal hysterectomy may give rise to an intestinal obstruction. Similarly, if the gall-bladder bed is not peritonized after a cholecystectomy, a loop of gut may become adherent and obstructed. Acute obstruction from cancer of the bowel is one of the most commonly seen lesions of this type. Volvulus in the elderly, intussusception in children, and strangulated hernia at any age are other causes of obstruction. Separation of the wound after an operation may allow a small loop of bowel to become obstructed, or a gallstone may perfor-

ate into the small intestine, giving rise to similar trouble.

One reason the mortality rate is high is because these cases often come to the operating room too late. When marked symptoms of toxemia are present, the diagnosis is not always easy to make because the symptoms may be atypical at first. The temperature, pulse, and respiration may be normal. If the obstruction is high, vomiting may occur early, but if it is in the colon, the symptoms are more of obstipation and a failure to pass gas. Colicky attacks of abdominal pain may occur, visible peristalsis may be seen, and distention is usually present. A flat x-ray plate of the abdomen may show the typical stepladder appearance of intestinal obstruction. So-called fecal vomiting, the inability to obtain results from enemas, and the failure of mineral oil to pass are all indicative of obstruction.

If a complete mechanical obstruction does not exist, the Miller-Abbott tube may relieve the condition, but its manipulation requires adequately trained personnel. If a true obstruction is present, the sooner it is surgically relieved the better.

Regional Enteritis

Regional enteritis, first described by Krohn and his associates at the Mount Sinai Hospital in New York in 1932, is now a well-recognized entity, although not commonly seen. This disease varies in its symptomatology and in the first phase may simulate acute appendicitis. In the second stage it may resemble acute ulcerative colitis, and there may be secondary anemia with fever and diarrhea. In the next phase obstructive symptoms occur, and finally multiple fistulae develop between loops of intestine or the bladder. The etiology of this condition remains unknown.

Surgical opinion is not unanimous regarding treatment, some preferring resection of the diseased intestine and others merely advocating side-tracking of the involved area. In some instances the appendix is removed and the regional enteritis overlooked at the primary operation. A persistence of symptoms then necessitates an x-ray study which may show the characteristic "string" sign appearance of the barium as it passes through the greatly diminished lumen of the bowel.

Mesenteric Lymphadenitis

Mesenteric lymphadenitis is another condition that may so closely simulate appendicitis that a diagnosis cannot be determined without operation.

Fever, elevation of the leukocyte count, pain, tenderness, and nausea may occur. To confuse the picture further, it is most frequently seen in children and young adults. The pains are apt to occur on either side and to be fleeting in character; rigidity is uncommon. Tenderness may be bilateral. Because over 90 per cent of the patients I have operated upon in a series of nearly 200 cases have drunk raw milk, I believe this disease is possibly bovine in origin. In my experience it rarely is seen in city children who have been raised entirely on pasteurized milk. If, however, these children spend a summer or two on a farm and drink raw milk, they too may develop mesenteric lymphadenitis. This theory is contrary to that of Wolinsky who maintained that these glands are secondary to a respiratory infection and are similar to enlarged cervical glands in the neck.

It was my good fortune to hear the first paper given on this subject in this country which was presented by the late Doctor Leonard Freeman at Saint Paul in 1922 at a meeting of the Western Surgical Association. It was a classical paper, and little has been added to our knowledge of the subject since that time. Pathological study of the glands has failed to reveal the origin of the disease. The glands vary markedly in their size and number and are usually encountered in performing an appendectomy for an acute or chronic appendicitis. If the glands are markedly enlarged and numerous and appear definitely more responsible than the appendix for the symptoms, the patient or parents should be advised that symptoms may persist for some months. These patients should go on a careful hygienic regime; they should drink pasteurized milk, and they should take sun baths, especially exposing the abdomen until it is well tanned.

Mesenteric Thrombosis

The classical picture of a rather elderly patient, known to have heart trouble and, in particular, auricular fibrillation, taken with an attack of abdominal pain, and passing blood from the rectum, is characteristic of mesenteric thrombosis. The abdomen may be moderately distended and present a rather doughy appearance. The important thing is to operate at once before gangrene has become extensive and, as soon as the diagnosis is established, to start dicoumarol and heparin to prevent a further extension of the thrombosis.

Appendicitis

Once I wrote a paper the title of which was "Half a Million Deaths from Appendicitis." The purpose of this was to point out that, despite improvements in hospitals, medical schools, transportation, laboratories, anesthesia, and the training of nurses and doctors, the mortality rate from this disease rose from 9.7 per cent per 100,000 population in 1900 to 12.8 per cent in 1936 and that in thirty years approximately 500,000 persons had died of this disease in this country. Notwithstanding thousands of articles and lectures on the subject both to layman and the profession, two persons were dying of appendicitis every hour until the introduction of the sulfonamides and penicillin. These drugs have effected a great reduction in the death rate, which has dropped from about 17,000 a year to probably less than 10,000 this year. This figure is still much too high. If everyone suffering from appendicitis could be operated upon before perforation has occurred, 98 per cent would recover. One statistical study compiled before the sulfonamides were used showed that of seven persons suffering from appendicitis and taking laxatives, six would die of peritonitis if not operated upon before perforation took place.

The sulfonamides have changed this. Since 1942 I have used 10 Gm. of sulfathiazole in saline routinely in the peritoneal cavity in perforated appendices and have closed all cases the past three years without drainage. No deaths have occurred; there have been no complications and no purulent discharges; and patients are usually out of bed in two days. Spinal anesthesia is used regularly; suction and intravenous glucose in saline is used ordinarily for only a day or two. More recently penicillin, 20,000 units, has been given every four hours, but as results were satisfactory before, this has only been used as an additional safeguard.

This entire paper could be devoted to appendicitis, and there would still be much left for discussion. It is impossible to discuss the varied

symptoms that so frequently mask the picture. It is important to remember that the leukocyte count and temperature can be normal in the presence of a gangrenous appendix; that often pain is slight and rigidity absent; and that if the appendix is retrocecal, tenderness may only be elicited by turning the patient on his left side with the knees drawn up and having him breathe deeply. Experience is perhaps the best teacher, but even those whose experience is great may be puzzled by the occasional case. As a rule, it is better to operate when in doubt. A high polymorphonuclear count usually calls for surgery. Of the various incisions, I favor the pararectus incision in which the rectus is retracted to the patient's left. A purse string of silk is used with inversion of the stump, and the incision is closed with fine chromic gut as sulfathiazole is dusted into the various layers.

Space does not permit discussion of various other interesting examples of the acute abdomen, such as hemorrhage, perforation and strangulation from congenital anomalies as a Meckel's diverticulum, or of perforation of a diverticulum of the jejunum or the sigmoid, torsion of the omentum, rupture of the liver, spleen, kidney, or intestine from trauma, and bullet or stab wounds of the various organs. From the standpoint of diagnosis and treatment, each of these conditions, as well as numerous others, presents definite problems that only serve to make this field of surgery perhaps the most intriguing and satisfactory.

When this subject was presented before the St. Paul Surgical Society, mention was made of the fact that early ambulation, the intraperitoneal use of sulfathiazole, the use of early oral feeding in preference to intravenous therapy, the replacement of enemas by mild laxatives and bathroom privileges and of bulky dressings by Mediplasts had simplified the work of our staff and improved our results. There is every indication that chemotherapy will play a still greater part in the future in lowering the mortality of acute abdominal conditions.

According to the Statistical Bulletin of the Metropolitan Life Insurance Company for February, 1946, the death toll from appendicitis dropped from 18,000 a little over a decade ago to 8,100 in 1943. Doubtless this figure has been lowered since 1943. The death rate fell from 9.9 to 6.1 per 100,000 from 1940 to 1943.

Credit for this improvement is given to the use of chemotherapy in cases complicated by peritonitis and to the national publicity campaign which has warned against the use of cathartics and the importance of prompt medical attention in the presence of abdominal pain.

THE USE OF MYRISTYL-GAMMA-PICOLINIUM CHLORIDE IN SURGERY

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ONE of the oldest problems of surgery is skin disinfection and the attempted disinfection of wounds. Before the application of germicides, gross dirt and organic matter must first be removed, as they would inactivate the great majority of germicides. Preliminary cleansing with tincture of green soap is necessary for removal of gross skin contamination. Nevertheless Trueta³¹ and Barnes⁴ have had excellent success with detergents which cleanse the wound and also are bactericidal, while innocuous to living tissue. One of the detergents which they used, was cetyl-trimethyl-ammonium bromide, a member of the group of quaternary ammonium salts.

The harsh chemicals which are used for skin sterilization do a great deal of harm in treating open wounds and burns, besides forming a thicker, less pliant scar.⁹ In 1908 Grossich¹² introduced tincture of iodine for skin disinfection, but its activity has been questioned.^{20,29,30} Of the heavy metals, mercury has been the most popular. Later, simple mercury salts were replaced by organic mercurials, as metaphen, merthiolate, furmerane, and phenyl mercuric nitrate, which were found to be many times more powerful.^{5,11} Phenol causes skin necrosis. Lysol is a 50 per cent solution of a mixture of ortho, meta, and para-cresol and is three times more bactericidal than phenol, and only slightly toxic, though not completely innocuous.

Halogenation trebles bactericidal action of coal tar acid dyes, but it decreases solubility. Dettol is one of this series. Mercresin^{8,21} is alcohol-acetone solution of penta-cresol and an organic mercurial, ortho-hydroxy-phenylmercuric chloride (mercarboline). Pentacresol is a mixture of five isomeric amyl cresols, derived from alcohol and cresol. While both components are strong, Mad-dock reports a synergistic action of the two, which is 200 to 300 per cent greater than the sum of the action of the two. Another disinfectant, which is somewhat weaker, is alcohol-acetone solution of tri-cresol and mercuric chloride, Novak's solution.²⁴ In 1935 Vaichalis and Arnold³² showed that the solvent alone, 50 per cent alcohol

and 10 per cent acetone, kills 96 per cent of the bacteria on the skin.

In an open wound or burn, none of the above chemicals has any use as they cause tissue damage, and devitalized tissue is an excellent medium for growth of bacteria. Iodine is very toxic to tissues and is inactivated by blood. The mercurials retain a fair percentage of their activity in serum protein, but they are extremely toxic toward leukocytes. Mild neutral soap solutions may be used, but tincture of green soap is far too toxic.^{1,10}

Friedrich¹⁰ in 1898 distinguished between fresh wounds, merely contaminated, and wounds in which inflammatory infiltration of the surrounding tissues has already occurred. He found that an interval of six to eight hours is necessary for multiplication of the bacteria and their invasion into neighboring tissues. Owing to extension of infection it appears highly unlikely that treatment of the surface of wounds will eradicate the infection. Remarkable healing of old wounds and infections can be accomplished by uninterrupted rest, immobilization, and light pressure, which principles have been described by Wangersteen and Koch.^{20,33,34} In the past there have been several factors which have been considered as the possible cause for the non-healing of wounds, even uninfected wounds. Four factors have come into consideration. These are as follows: (1) removal of granulation tissue; (2) restricted circulation due to edema; (3) presence of a serum exudate; (4) lack of maintenance of compression to promote circulation.

Subsequently, prominent surgeons in the United States further improved the treatment of wounds. Reid^{25,26,27} observed that healthy granulation tissue can overcome bacterial contamination and also that granulation tissue is very resistant to the spread of infection and should not be debrided or disturbed. Further, Reid²⁷ found that edema, causing restricted circulation, delayed healing of wounds, which was attributed to the exudation of serum and prevented the formation of a fibrinous medium necessary for growth of epithelial cells. Koch²⁰ has also focused attention on compression, not constriction, as a factor in the treatment of wounds, compound

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fractures, and burns to prevent loss of body fluid and maintain circulation.

* * *

As early as 1916, Jacobs and Heidelberger^{14,15,16} described the germicidal activity of quaternary ammonium salts derived from hexamethylenetetramine. In May, 1935, Domagk⁷ of the German I. G. Farbenindustrie published in the "*Deutsche-Medizinische Wochenschrift*" an article which showed further studies relating to germicidal power of quaternary ammonium salts. Though these salts are excellent detergents themselves, their action is reduced by the soaps. As mentioned above, during the Spanish Civil War (1936-38) Trueta²¹ and Barnes⁴ reported excellent results with their use, especially cetyl-trimethyl-ammonium bromide. In 1940 Miller and Baker,²² and in 1941, Harrison and Miller³ compared the *in vitro* properties of soap and certain cationic detergents. As soaps contain an alkyl radical with a negative charge, they are classified as anionic detergents. Cationic detergents were found to be more general inhibitors of bacterial metabolism than anionic detergents, according to measurements made in the Warburg manometric apparatus. Maximum inhibition was found with compounds of twelve, fourteen, and sixteen carbon atoms, lauryl, myristyl, and cetyl respectively.

Brown et al. have found that the use of phemerol (paratertiary-octyl-phenyl-diethoxy-dimethyl-benzyl-ammonium chloride) to be superior to tincture of green soap and alcohol, and cresol-mercurials, and halogens. Another member of the group of quaternary ammonium salts is cetylpyridinium chloride (Ceepryn), which also has been found to be very powerful.¹⁸ Zephiran is the third quaternary ammonium salt on the market at the present.

Another quaternary ammonium salt is myristyl-gamma-picolinium chloride (quatresin). Dr. Marie Moorhead²³ at Ohio State University has done extensive bacteriological studies on quatresin and compared it with the other quaternary ammonium salts. Against staphylococcus aureus it is somewhat more powerful and is equally powerful against typhoid and dysentery.

Both tincture of quatresin, 1-500, in alcohol-acetone solution (50 per cent alcohol, 10 per cent acetone, 40 per cent water) and aqueous solution, 1-1000, are now available and have been used rather extensively on the surgical service at the Minneapolis General Hospital. At first the

tincture was used for skin sterilization in minor cases only, and in a series of approximately one hundred cases, as insertion of Kirshner wires, Steinmann pins, Roger Anderson pins, and also the removal of metallic fixation, as nails, screws, etc., no infection developed postoperatively. Subsequently it was used as the routine disinfectant on the fracture and orthopedic services, and it has been used in approximately 300 major orthopedic cases. Also, it has been used for pre-operative preparation in about one hundred and fifty cases of abdominal surgery. The only infection encountered in this series occurred in an open reduction of a hip, with open arthrotomy, which proved to be far more tedious than usual and in which the infection appeared fifty days postoperatively. With hot packs and penicillin, the infection which proved to be caused by a hemolytic streptococcus, not an ordinary wound contaminant, cleared up in a few days.

Solution of quatresin has been used as packs for preliminary pre-operative skin cleansing. In about fifty cases of herniorrhaphy packs of solution of quatresin have been applied to the inguinal region for about twenty minutes, during which time the patient was shaved. This was done in patients who were excessively heavy and whose personal hygiene was poor. After the application of packs the routine skin preparation with tincture of quatresin was carried out. None of these cases showed any drainage or reaction at the site of the surgical wound. Aqueous solution of quatresin has also been used for irrigating minor abrasions and lacerations and about fifteen compound fractures. In a much larger series of compound fractures, thirty-five, treated by the technique in use at the Minneapolis General Hospital,^{17,18} the skin was prepared with tincture of quatresin, and the irrigation of the wound was done with saline. No infection developed, though control is lacking as during the previous five or six years a large proportion of the compound fractures healed per primum, with infection in less than 10 per cent.^{17,18}

Aqueous solution of quatresin has also been used rather extensively on the gynecological service. The solution is non-irritating and has been used as a vaginal pre-operative disinfectant in about one hundred cases. As the solution is colorless, a few drops of the tincture, which is tinted, have been added to obtain a colored solution in order to reveal the area which has been prepared.

Experimental

An attempt was made in the laboratory to determine whether irrigation of a contaminated wound with solution of quatresin could rid a wound of contamination to a greater extent than irrigation with physiological saline. Methods devised to study infection in animals always entail great difficulty in the control of many factors which influence the course of the infection. Control of virulence of the organism is only one of the factors which has to do with the creation of infections which are similar in different animals. Mice are usually used in assaying the potency of the culture. The organism may be introduced intraperitoneally with the various drugs to be tested being administered either orally or by the intraperitoneal route. By varying the number of organisms injected and the dose of the drug used, the comparative efficiency of the drugs can be assayed with a fair degree of accuracy.

An evaluation of the effects of bacteriostatic agents which are implanted in contaminated wounds is even more difficult. Organisms introduced into wounds of the skin, or introduced through a needle into the subcutaneous tissue, give rise to widely varying lesions in different animals. This is true even when frozen or liphophilized organisms are used. The effect of the addition of the drug to be tested when added to such contaminated wounds has, in our hands, been impossible to interpret with exactness. A determination of the tension required to separate wound edges is of value if one is studying wound healing. As our criteria we chose to determine the presence or absence of the introduced organisms following the application of the drug used in the particular test.

Preliminary bacteriological studies on quatresin (myristyl-gamma-picolinium chloride), carried out by Dr. Marie Moorhead at Ohio State University, indicate that the drug can be diluted 1-85,000 and still be effective in killing a standard strain of staphylococcus aureus *in vitro*. The effective dilution of quatresin was reduced to 1-12,000 when 10 per cent horse serum was added to the culture medium. One would expect this effective concentration to be further reduced if the drug is placed in a wound where serum and blood are present in large amounts.

For our work, we chose the living animal, the dog, rather than the *in vitro* method of Dr. Moorhead. The test organisms chosen for our

work was a hemolytic, coagulase-positive staphylococcus aureus freshly isolated from a fatal human bacteremia. Previously Altmeier and Gibbs² had shown that the staphylococcus is the most common wound contaminant, and accordingly it was selected. As it proved rather difficult to produce a virulent infection in dogs, the hemolytic variety of staphylococcus was used, which is a rare variety in wound infections. To adapt this organism to the dog, repeated intravenous transfers from dog to dog were carried out. A total of six passages was necessary before a small dose (1.0 c.c. of a 24-hour broth culture) would kill the dog in eighteen to twenty-four hours. This culture was maintained on agar slants in the icebox. It is recognized that this was not the ideal method of maintaining uniformly virulent organisms. However, since most of the animals had two wounds, one the donor site from which a bone graft was removed and the other the host, it was possible to have a control. In addition we were examining for the presence or absence of the organisms in the wound; therefore our interest was primarily in a strain of staphylococcus that was capable of existing in a control wound for at least twenty-four hours. Twenty-four hours before the wound was to be contaminated, the organisms were taken off the agar slant and transplanted to a tube of nutrient broth. This was then diluted 1-100, and 1.0 c.c. was injected into the wound. Repeated plate counts showed that the count never varied over a thousand organisms per c.c.

A series of experiments were carried out in which a bone graft was removed from the tibia of a dog and implanted into the femur, where it was held with two or three vitallium screws. Since treatment of compound fractures practically always involves the use of some internal fixation, which is a foreign body and tends to keep infection alive, it was thought that this experiment would reveal the difference in results obtained when a wound is irrigated with solution of quatresin or with saline. Also in some compound fractures it is advisable to leave large loose pieces of bone in the wound, as their removal would leave too large a gap and lead to non-union. The donor site was also inoculated and left untreated. Cultures from this area were always positive for staphylococcus aureus. The grafted site was then used as a test area, and cultures were taken forty-eight hours after treatment. A uniform proce-

TABLE I. QUATRESIN AS A DISINFECTANT IMMEDIATELY FOLLOWING OPERATION

Experiment Number	Inoculum Size	Infection Time	Therapy	Cultures†
1224	5,000,000	0	None	3 plus
	5,000,000	0	Quatresin	0
114	4,000,000	0	None	3 plus
	4,000,000	0	Quatresin	0
19	4,000,000	0	None	3 plus
	4,000,000	0	Quatresin	0
316	6,000,000	0	Quatresin	3 plus
319	6,000,000	0	Quatresin	3 plus
17	4,000,000	0	None	3 plus
	4,000,000	0	Saline	3 plus

†2 plus = 100-200 organisms per plate
 3 plus = 200-500 organisms per plate
 4 plus = 500-1000 organisms per plate

cedure was worked out for culturing the wounds. The wound was spread, and swabs were taken from the infected area. At least five swabs were individually introduced into melted agar, cooled at 45°C. and then poured into a petri plate. These five plates were incubated for forty-eight hours, and counts were made at the end of the incubation period. If the counts were from 500-1000, they were recorded as 4 plus; 200-500, 3 plus; and 100-200, 2 plus. The errors in this procedure are recognized, and little significance was attached to the results unless all five plates had fewer than ten colonies per plate. This was picked as our criteria since we were interested in sterilizing the contaminated area.

In Table I summaries of four animals are presented. The organisms were introduced immediately after operation. Quatresin solution was used in the form of an irrigant before the wound was closed. The time of contact of the germicide was approximately twenty minutes since that was the time necessary for the quatresin to run in. Besides the effect of the quatresin there was the added effect of mechanically washing the organisms out. To control this, one dog received a saline irrigation instead of the quatresin.

In these experiments the donor site was used as a control and received no therapy. Experiments number 316 and 319 were carried out in a little different manner in that the inoculum size was increased, and no control site was used. It will be noted that the increased size makes considerable difference in the efficiency of the quatresin. For this reason, the following experiments were carried out with the increased inoculum.

In the second set of experiments, the operation

TABLE II. QUATRESIN AS A DISINFECTANT IN WOUND INFECTION

Experiment Number	Inoculum Size	Infection Time (hr.)	Therapy	Cultures
115	6,000,000	18	None	4 plus
	6,000,000	18	Quatresin	2 plus
2645	6,000,000	18	None	4 plus
	6,000,000	18	Quatresin	4 plus
11545	6,000,000	18	None	4 plus
	6,000,000	18	Saline	4 plus
2545	6,000,000	18	None	4 plus
	6,000,000	18	Saline	4 plus

and infection were carried out as before. However, an eighteen-hour incubation period followed before irrigation with quatresin was started. From these data it was hoped that some conclusions could be drawn as to the efficiency of quatresin in combating postoperative infections.

From the preceding experiments one can conclude that it is impossible to sterilize a wound that is already infected with a hemolytic staphylococcus, especially, when the inoculum is as large as 6,000,000 organisms and the infection has persisted for eighteen hours prior to treatment. A series of experiments were then carried out in which the infection time was reduced to one hour. The errors of mechanically washing the organisms out of the wound before they had time to cause infection would then be partially eliminated.

In the next series of experiments the femur of the dog was exposed by separating the vastus lateralis muscle from the rectus femoris muscle. The inoculum was introduced into the wound, and one hour later the irrigation was carried out. Two days later the culture was taken.

Discussion

Tincture of quatresin has been found to be an excellent pre-operative surgical disinfectant, after Dr. Moorhead had demonstrated its strong germicidal action by laboratory methods and compared it with other quaternary ammonium salts.

The tincture of quatresin has been found to be an excellent skin disinfectant and has been used extensively at the Minneapolis General Hospital.

Also tincture of quatresin has been used as a skin disinfectant in the Surgical Laboratory at the University of Minnesota. Dr. Baronofsky of the Department of Surgery at the University of Minnesota has used it in about 150 cases of in-

TABLE III. QUATRESIN AS A POSTOPERATIVE DISINFECTANT

Experiment Number	Inoculum Size	Infection Time (hr.)	Therapy	Cultures
325	6,000,000	1	Saline	4 plus
327	6,000,000	1	Saline	4 plus
225	6,000,000	1	Quatresin	3 plus
313	6,000,000	1	Quatresin	2 plus
315A	6,000,000	1	Quatresin	0
331A	6,000,000	1	Quatresin	0
331B	6,000,000	1	Quatresin	0
47A	6,000,000	1	Quatresin	0
47B	6,000,000	1	Quatresin	0
423A	6,000,000	1	Quatresin	0
423B	6,000,000	1	Quatresin	0
424A	6,000,000	1	Quatresin	1 plus
424B	6,000,000	1	Quatresin	0

testinal anastomosis carried out in the laboratory. There was no case of infection and all the wounds looked cleaner and showed better healing than when the old method of iodine, which was later removed by Richardson's solution, was used.

The aqueous solutions of quatresin can be used freely on any open surface and in the early stages it is definitely superior to saline. No toxic reactions have been found from its use. In one experiment it was injected into the hip joint of a dog and microscopic slides showed the cartilaginous surfaces to be the same as on the control side. Similarly the solution was poured into a trephine opening in the skull. Except for surgical intervention there was no reaction.

Even though infections have been prevented by its use in the early stages, it has no effect on late case. For such cases one must rely entirely on the principles of rest, immobilization and light pressure, after a proper debridement has been done, all of which are indispensable also for treatment of early injuries.

Summary and Conclusions

An attempt was made to evaluate quatresin (myristyl-gamma-picolinium chloride) with respect to its efficiency as a disinfectant in surgical procedures to eliminate infections, both in wounds without foreign bodies and wounds with foreign bodies, i.e. screws and bone grafts.

1. It has been shown that wounds infected with 6,000,000 organisms, per c.c. can not be sterilized by the use of quatresin when it is used as an irrigant immediately after surgical manipulation,

providing a bone graft which is a real foreign body, is implanted into the wound. If the inoculum is reduced to 4,000,000 organisms per c.c., quatresin will sterilize the wound.

2. If treatment with quatresin is delayed eighteen hours after the introduction of the organisms, there is no effect, as with any other disinfectants.

3. If quatresin is used in the form of an irrigant one hour after surgery, varied results are obtained. The tables show the superiority of quatresin over saline.

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TUBERCULOUS PERICARDITIS

Incidence at Glen Lake Sanatorium

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TUBERCULOSIS of the pericardium has been called the least common and the most serious of the tuberculous infections of the serous membranes and was considered a rare disease by the early writers. Rokitsansky is credited⁷ with the first mention of it in literature in 1852 and the first clinical case was reported in 1872. Osler⁷, in 1892, reported seventeen cases and observed that only twenty-seven references had appeared in the *Index Medicus* to date and that only five cases had been described in the *Transactions of the Pathological Society of London*.

The literature after 1900 shows an increasing number of reports with a fairly consistent rate of occurrence. Isolated case reports became more numerous and the collected series indicate a fairly constant incidence of about 1 per cent in all autopsies and 4 per cent in those with tuberculosis. Occasional collections, as those from South Africa with a large colored population, show a much higher rate. Antemortem recognition is still the exception as judged by the reports from numerous hospitals.

To our surprise, the Glen Lake autopsy records of 1,292 tuberculosis patients show tuberculosis of the pericardium in only nineteen, that is, 1.5 per cent as compared with 4 to 6 per cent elsewhere. Our proved clinical cases make a total of twenty-two in a patient population of 8,578, or .25 per cent. The fact that Minnesota as a state has one of the lowest rates of morbidity and mortality for tuberculosis may account for the infrequency of this very serious complication. Doctors Charlotte Van Winkle and George Higgins have performed the autopsies in almost all cases, thus giving assurance of zeal and accuracy.

Incidence percentages differ in our small group from those reported in the literature in every respect but one, that of mortality, namely 80 to 90 per cent. Thompson considers tuberculous pericarditis to be a disease of the elderly from forty-nine to eighty-four years of age with an average of sixty-nine. Keefer⁵ and also Blalock and Levy² find it predominantly in those past forty. In the

Glen Lake group over half of the patients are between twenty and forty.

As to sex, Blalock and Levy², and Whitehill³ found males in the great majority (85 and 86 per cent, respectively), whereas our cases are almost equally divided between males and females.

The clinical and pathological features of the disease have been described in detail in many published case reports. In sixteen cases in our series, the diagnosis was made at autopsy only, although in three, electrocardiograms were taken, presumably because of a suspicion of heart involvement. Ten showed dense fibrous adhesions or obliteration of the pericardial sac, indicating old healed or healing lesions. Hypertension with hypertrophy of the left ventricle occurred in one of these. Four had fresh fibrinous adhesions or minute fresh tubercles denoting an acute process. Two had a combination of old and recent pericardial involvement.

Only six cases were diagnosed clinically, all with pericardial effusion. Tubercle bacilli in the fluid or guinea pig inoculation gave positive proof. Three of the six patients died of progressive tuberculosis of the lungs. The other three with tuberculous pericarditis as the major cause of illness will be reported in more detail. They recovered from the acute pericardial disease, but one died of portal cirrhosis some months later. Summaries of the three recovered cases are reported.

A. K., a housewife, aged thirty-six, was admitted April 17, 1939. Her illness began late in January, 1939, with dyspnea, malaise, and weakness. During the past ten years, she had suffered four distinct attacks of painless jaundice associated with nausea lasting from one week to three months. Her pericardial effusion was aspirated and by guinea pig, proved to be tuberculous. The effusion was treated by open drainage with catheter. The lungs were negative for tuberculosis. After her acute pericardial disease had subsided, she was sent to the sanatorium for further treatment and because genito-urinary tuberculosis was suspected. Tubercle bacilli were not found in the urine, and cystoscopy and pyelograms were negative. After five months, when she was improved and about to be discharged, she developed jaundice with a palpable spleen and liver. Signs of pneu-

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TUBERCULOUS PERICARDITIS—FENGER AND HANSEN

monia appeared and she died on October 18, 1939. Autopsy revealed the cause of death to be portal cirrhosis and bronchopneumonia. The pericardial sac was obliterated by dense fibrous adhesions.

C. B. was admitted on February 16, 1935, at the age of thirty-six years. He had been a patient at the State Sanatorium from September, 1932 to April, 1934, with tuberculosis, moderately advanced. In November of 1934, an enlarged gland in the cervical region was found to be tuberculous. X-ray plates showed tuberculosis, moderately advanced with a spread. On admission to the Glen Lake Sanatorium, he had malaise, fever, and cough. The sputum was negative for tubercle bacilli. Bed rest and routine sanatorium care resulted in arrest of the pulmonary process and discharge on December 4, 1935.

He was readmitted November 7, 1936, complaining of malaise, slight cough, anorexia, and dyspnea on exertion. His temperature suddenly rose to 104 degrees. A clinical diagnosis of tuberculous pericarditis was confirmed by x-ray. The heart sounds were distant and a friction rub was present. Guinea pigs injected with the pericardial fluid died of miliary tuberculosis. The lung lesion was considered to be inactive. He gradually improved on routine care, was discharged as quiescent after six months (May 23, 1937) and has remained well and able to work for the past eight years.

R. L., a housewife, aged thirty-five, was well up to January 10, 1943, at which time she noticed edema of the ankles; and on February 25, 1943, she had chills, fever, extreme weakness, dyspnea and pain in the left chest. Pericardial effusion was found and aspirated. Tubercle bacilli were isolated from the aspirated fluid. The lungs were negative for tuberculosis on x-ray ex-

amination. On bed rest, the effusion gradually began to disappear and the symptoms subsided. In November of 1943, peritonitis appeared; in December of 1943, right pleural effusion; and February of 1945, left pleural effusion. Gradual improvement of these complications took place. She is now clinically well and will be discharged in December of 1945.

Conclusions

1. Only twenty-two cases of proved tuberculous pericarditis occurred in 1,292 autopsies and in 8,578 patients (1.5 per cent of autopsies and .25 per cent of patients).
2. Sixteen cases were diagnosed at autopsy without clinical recognition. Six cases were diagnosed clinically. Three died of the disease.
3. Tuberculosis of the pericardium is, at Glen Lake Sanatorium, a rare complication of tuberculosis with a grave prognosis.

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SEROLOGIC TESTS FOR SYPHILIS

The Frequency of Positive Serologic Tests for Syphilis in Relation to Occupation and Marital Status Among Men of Draft Age. Lida J. Upsilon, Paul T. Bruyere and Martha C. Bruyere. *Journal of Venereal Disease Information*, Washington, 26:216-222, (Oct) 1945.

An analysis based on information concerning occupation and marital status for a random sample of men examined for Selective Service showed that the prevalence of syphilis varies widely among different occupational groups. It also showed that in any occupation group the prevalence of syphilis is substantially higher among single white men than among married white men but the differences between single and married groups among nonwhites was small.

The analysis was based on the results of serologic tests for syphilis performed on 531,236 Selective Service registrants who constituted a 20 per cent sample of the men examined from January 1 through May 31, 1945. Blood tests were tabulated according to age, race, marital status, and eleven broad occupational groups.

The prevalence of syphilis among single white men ranged from one or two per thousand for seventeen-year-old men in each occupational group to approximately thirty per thousand for the thirty-seven-year-old men in the professional group, fifty per thousand for proprietors, forty-five per thousand for clerical, forty-five per thousand for salesmen, eighty per thousand for craftsmen, eighty per thousand for operatives, eighty-

five per thousand for service workers, and ninety per thousand for laborers.

The prevalence rates for married white men were 25 to 50 per cent lower than for single white men in corresponding occupational groups. In general among the white men, the differences between the syphilis rates of single and married men were much greater than were the differences between occupational groups, and these differences were least in those occupational groups having the highest syphilis rates.

Among Negro men a tendency for higher prevalence rates among the less skilled occupational groups was apparent but not statistically significant, and no statistically significant difference between married or single groups could be demonstrated.

The rates for the several occupational groups of Negro men ranged from about twenty per thousand among seventeen-year-old single Negroes in the more highly skilled occupational groups to more than 300 per thousand among thirty-seven-year-old Negro men in unskilled groups.

Prevalence rates for students were lower than for other groups on the whole. Rates for men other than married or single were compared, as a group, and the comparison showed that white men in this group had significantly higher rates than either the single or the married men in corresponding age groups.

THE ACCELERATION OF BONE PRODUCTION BY USE OF GROUND BONE

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THIS study was occasioned by observation of the long healing period required for massive bone grafts and of the need for devising means to accelerate this process. The renewal of a removal strut or framework of quiescent, passive bone is well characterized by the term "creeping substitution."

It has long been thought that if bone were reduced by grinding to bone dust and suspended in blood or plasma² to the consistency of a paste revascularization and other simultaneous dependent processes should be facilitated and result in real saving of time in production of bony union.

As the first step in trying this conception a grinding device was contrived. Segments of long bone in experimental animals were removed and replaced with bone chips in one extremity and as ground bone paste in the other. The only variable was the size of bone mass or particles. Bone production for each procedure was followed by x-ray and in the gross after sacrifice of animals.

In a series of rabbits the periosteum over the fibulae was incised and reflected, and the total fibulae removed under ether anesthesia. Within the periosteal sheaths of the left fibulae in all the rabbits ground bone paste was inserted. Adjacent muscle and fascia were loosely approximated and the skin edges united with fine silk suture. The right fibulae in half of series were replaced by 1/16 inch to 1/8 inch segments of bone. The right fibulae were discarded in the other half of the series. Closures were made similar to those on the left.

The optimum time for comparison of bone production following these procedures was found to be three weeks. After this time had elapsed the rabbits were killed and the extremities were x-rayed and examined in the gross.

Representative films (Figs. 1, 2, and 3) show bone production three weeks following splitting of the periosteum and replacement with ground bone paste (*left* in each figure) and with bone chips in (Fig. 1, *right*) and regeneration from periosteum alone (Fig. 2 and 3, *right*). The structure of the sectioned fibulae is still apparent, indicating incomplete substitution by new bone. Pro-

duction of bone from a paste of ground-up fibulae was from two to three times that present in the right fibulae.

The weight of fibulae averaged 0.4 grams for regrowth from ground bone, 0.27 grams from bone segments, and 0.19 grams from periosteal bone production *per se*.

It is believed that this study has important applications in the care of fractures, in other orthopedic situations and in plastic surgery. This concept represents no radical departure from accepted practices since bone dust from the sawing of bone has long been conserved and used. The obtaining and converting of rongeur bone chips to bone dust in paste suspension is technically simple and rapid. There is less manual handling of bone; consequently it is easier to maintain asepsis. The bone paste can be delivered into a syringe and accurately applied by touch or under fluoroscopic guidance. Operative time is reduced since the bone does not have to be shaped and chips tediously placed.

An advantage inherent in the use of this medium is the economy in donor bone needed. On test a given volume of bone produces three to five times its volume as powder and six to twelve times the original volume when suspended in fluid, the ratio being dependent on the proportions of cortex and cancellous bone, fineness of grind and density of suspension. Thus the bone volume taken is only a fraction of that required for chip fill-in or shaped grafts (true even if the donor defect is also filled in with suspension).

Clinical applications suggested by this study includes the following:

1. Filling in defects in length and cross section of bones. The cavity formed by excision of scar tissue can be filled in with bone suspension to supplement bone formation from an onlay graft or the bone suspension may be used alone with plate retention.

2. Filling in defects of skull, nasal, malar, and other bones by open surgery, by injection through a needle for lesser depressions, or by precast shapes³ using ground bone or cartilage.

3. Accelerating repair when delayed union or non-union may be anticipated due to interposition,

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ACCELERATION OF BONE PRODUCTION—HOYER

distraction, or fractional contact of bone ends. Needling and puddling may be effective in forcing aside or impregnating with multiple tracts

Summary

Comparable defects were produced in left and right fibulae of rabbits, filled in with bone chips

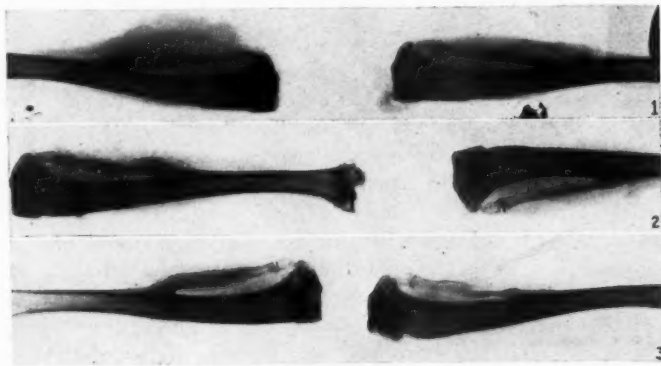


Fig. 1. X-ray three weeks after removal of fibula and replacement with ground bone paste (left) and bone chips or segments (right).

Fig. 2. X-ray of extremity of another rabbit three weeks after removal of fibula and replacement with ground bone paste (left) and regeneration from periosteum alone (right).

Fig. 3. X-ray in third rabbit three weeks after replacement with ground bone paste (left) and regeneration from periosteum alone (right).

of suspension the interposed tissues or gaps in contact.

Present emphasis in orthopedic practice is on the use of thin strips of cancellous bone, obtained from the ilium as a filler for orthopedic defects.¹ Use of ground bone suspension has a like merit and additional distinct applications. The cancellous element of a rib is similar to that of the ilium in its bone producing quality, is easier to obtain and its cortical element provides in ground-up state diffuse, minute, local depots of the components with which osteoblasts lay down bone. Vascular exchanges make these quickly available by way of a rapidly established vascular bed.

on one side and ground bone suspension on the other. Bone production from ground bone was found to be much more rapid than that from bone chips. This acceleration is due to ease of vascularization of a suspension. Conversely, a solid mass of bone offers time-using resistance to vascular invasion. Clinical applications are believed to be many and time saving.

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THE FOOTPATH TO PEACE

To be glad of life, because it gives you the chance to love and to work and to play and to look up at the stars; to be satisfied with your possessions, but not contented with yourself until you have made the best of them; to despise nothing in the world except falsehood and meanness, and to fear nothing except cowardice; to be governed by your admirations rather than by your

disgusts; to covet nothing that is your neighbor's except his kindness of heart and gentleness of manner; to think seldom of your enemies, often of your friends and every day of Christ; and to spend as much time as you can with body and spirit, in God's out-of-doors—these are little guideposts on the footpath of peace.—HENRY VAN DYKE.

GALLSTONE ILEUS

Report of Case

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WHILE the treatment of gallstone ileus is surgical the diagnosis is just as much a problem for the internist as the surgeon.

A gallstone to produce intestinal obstruction must be large, probably 2.5 cm. in diameter or larger, and must erode its way into the small intestine. Because of the proximity of the duodenum to the gall bladder this is the usual site of the perforation although sometimes the fistulous track enters the jejunum, stomach or colon. A stone, free in the peritoneal cavity, may make its way into any part of the intestinal tract or even into the urinary bladder. It usually obstructs in the lower ileum where the lumen is narrower.

Bartholin in 1654 is credited with having first described a case of gallstone ileus. Courvoisier in 1890 reported on 131 cases and Von Wagner in 1914 on 334 cases which had appeared in the literature. Many isolated cases have been reported in the past twenty years but of the few articles which have appeared recently I have found the one by Rigler, Borman and Noble published in the November 22, 1941, *Journal of the American Medical Association* the most valuable. According to Hinchey, his case is the only one reported in which a second obstructing stone was removed during convalescence from the operative removal of the first one.

Gallstone ileus appears in the later decades, several times as often in women, 75 per cent of all cases being present in women over sixty.

The symptoms are those of intestinal obstruction with vomiting and colic which may be periodic. Some individuals have a history of gallstones, some of periodic digestive disturbance and some give a history of no digestive trouble until obstruction occurs. With high obstruction there is no distension.

The condition has to be differentiated from other types of mechanical obstruction and from paralytic ileus. A knowledge of previous gallstone attacks or x-ray evidence of the presence of gallstones is of value. In paralytic ileus gaseous distension is more marked and colic may be absent. Obstruction due to gallstone ileus does not respond to duodenal drainage any better than

strangulation of the intestine associated with intussusception, volvulus, mesenteric thrombosis or obstruction due to new growths. Failure to deflate in any obstruction is an indication for immediate operation. As there is little or no distension in gallstone ileus there is a temptation to employ nasal suction too long. The leukocyte count and pulse are of little value in this condition whereas both tend to rise in obstruction due to strangulation.

X-ray is the most valuable aid in diagnosis. According to Rigler et al. only seven cases had been reported diagnosed by x-rays before 1935. From 1935 to 1940 twenty-four cases had been so diagnosed. In four of Rigler's fourteen cases the stone was visualized by x-ray. However in thirteen of his fourteen cases there was x-ray evidence indicating gallstone ileus. A most valuable x-ray sign is evidence of gas or if barium is used of gas and barium in the bile ducts. This is better demonstrated by a film of the upper right abdominal quadrant than with the tube focused over the mid-abdomen and is almost pathognomonic of a fistula from the duodenum into the gall bladder.

Treatment is, of course, surgical with preliminary deflation by duodenal tube and correction of dechlorination. Duodenal drainage should not be persisted in as the longer the drainage the higher the operative mortality. The mortality is at present about 50 per cent.

Report of Case

Mrs. E. G. S., a widow, aged seventy-five, was first seen February 4, 1942. She complained of right abdominal pain which had been present off and on all day followed by nausea and vomiting. On further questioning she admitted she had had the same pain off and on for four years but never had had any associated vomiting.

She stated she had had a stone removed from the left kidney twenty-five years before and had known she had high blood pressure for eighteen years.

On examination her blood pressure was 260/140, pulse 80, temperature 98.6. The abdomen was soft, borborygmi were present but there was no distention nor tenderness in the region of the appendix or gall bladder. The vomitus was grumous in character suggesting coffee grounds.

GALLSTONE ILEUS—DRAKE

On admittance to the hospital the next day (February 5), physical examination was essentially the same, vomiting continued but the blood pressure was only 140/72. Over a pint of bile-colored fluid was drained from the stomach with relief. This material contained free HCl 17, combined acid 77, and occult blood. The leukocyte count was 8,000.

Nasal suction was instituted and intravenous glucose administered. A flatplate taken the day after admission (February 6) showed some gas in the stomach and colon but none in the small intestine and no gallstone.

The symptoms of obstruction persisting, a small amount of barium was given the fifth day after admission (February 11) and the x-ray showed a deformed duodenal cap and a non-opaque shadow about 4 cm. in diameter to the left of the spine and behind the stomach. No barium had progressed beyond the obstructing mass which was apparently in the distal duodenum. A tentative diagnosis of gallstone ileus was made.

The following day (February 12) a laparotomy was performed by Dr. J. F. Hammond. The gall-bladder region was occupied by adhesions and an inflammatory mass which extended to the region of the tail of the pancreas, suggesting an associated malignancy. Because of the inaccessibility of the mass back of the stomach a gastro-enterostomy was performed to relieve the obstruction.

After a stormy postoperative period of two weeks colicky epigastric pain, nausea and vomiting returned (February 27). A few days later (March 2), x-ray examination showed a functioning gastro-enterostomy, barium outlining the duodenum, gall bladder, common and hepatic ducts. There was no definite shadow of a gallstone but obstruction about six inches beyond the gastro-enterostomy site was almost complete.

The following day (March 3), a gallstone 2.5x2.5x3 cm. with a faceted surface was removed from the upper jejunum.

Convalescence from the second operation was stormy. A fistula developed and the drainage was copious for two or three weeks. The nature of the drainage fluids interfered with the healing and nutrition of the patient. She developed some indication of vitamin deficiency, a very red tongue being present. Daily intramuscular injections of thiamine chloride and cevitamic acid were given for eight days and recovery followed with a slight fistula persisting.

The patient left the hospital, April 3, after two months in the hospital and later visited her daughter in Oskaloosa, Iowa. Her physician there was informed of her illness and the fact that the removed gallstone had a faceted surface and that she doubtless had or had had another stone.

On April 30 the patient had another attack of acute abdominal pain associated with nausea and persisting vomiting. X-ray showed an obstruction in the upper small intestine and on operation a second gallstone about the same size and at the same location as the previous one was removed. Convalescence was uneventful.

It is rather remarkable that this patient did not know previously that she had any gall-bladder disease. Her symptoms had apparently not been severe enough nor incapacitating enough to require x-ray investigation. Even during the period that the first gallstone was making its way into the duodenum she was not incapacitated. In spite of a high blood pressure for the past eighteen years and advanced years she went through three abdominal operations inside of three months without any circulatory difficulty.

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PREPARATIONS EXEMPT FROM COUNCIL CONSIDERATION

The following official preparations have been declared exempt from Council consideration for inclusion in New and Nonofficial Remedies, as their actions, uses and nature are sufficiently well understood by physicians not to require such inclusion.

This list has been adopted for publication so that it may be brought to the attention of all manufacturers and other interested groups. From time to time there may be added other drugs, the names of which will also be published.

Iron and Ammonium Citrates
Ferrous Sulfate
Calcium Gluconate
Antimeningococcic Serum
Liver and Stomach Preparations included in U.S.P.
Digitalis Preparations included in U.S.P.
Acetylsalicylic Acid
Caffeine with Sodium Benzoate
Carbon Dioxide
Oxygen
Oxygen-Carbon Dioxide Mixtures
Chlorinated Paraffin (Chlorococane)

Cinchophen
Neocinchophen
Dextrose Solution
Sodium Chloride Solution
Isotonic Solution of Three Chlorides
Sodium Citrate
Sodium Biphosphate
Magnesium Sulfate
Trioxymethylene (Paraformaldehyde-U.S.P. X.)
Methylene Blue
Quinine and Urea Hydrochloride
Salicylic Acid
Sodium Salicylate
Natural Oil of Sweet Birch (Methyl Salicylate)
Pentobarbital Sodium
Papaverine Hydrochloride
Emetine Hydrochloride
Totaquine
Tribasic Calcium Phosphate
Magnesium Trisilicate
Tribasic Magnesium Phosphate
Ichthammol Preparations
Strophanthin

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MALIGNANT TUMORS OF THE KIDNEY

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THE dictum that cancer is curable in its early stages may be difficult to demonstrate to our public if we try to prove it by our kidney-tumor cases. Even the most common symptom of kidney tumor, hematuria, which is the one that most often causes the patient to seek the physician's opinion, is frequently a manifestation of an advanced lesion. Hematuria must always be regarded with suspicion by the attending physician and should never be dismissed lightly. A normal urine may be present and the patient be the possessor of a malignant kidney. Howes observed that the prognosis in all renal cortical tumors is bad, since the growth may remain symptomless for an initial period and remote metastases may occur early.

Patients with prostate disease show hematuria frequently as one of their symptoms. This blood may not arise from the prostate however and these patients should be checked by excretory urograms for the possible presence of an associated kidney tumor. No tell-tale symptom aside from hematuria is yet available to us to arouse our suspicions of kidney tumor.

We are thus at a stage where late diagnosis, which is most often the case, necessitates radical surgery in an effort to cure our patient. In most cases we fail to cure because all tumor tissue is not removed. Even though the surgical mortality is low, the survival rate in terms of a three- to five-year period is low also.

This contribution is a review of thirty-two cases of malignant tumors of the kidney treated in St. Mary's and St. Luke's hospitals in Duluth in an effort to find, if possible, any encouraging factors in diagnosis or treatment. A tabulation of cases from the hospital records was made and the current literature on this subject was drawn upon. Most of the patients in this series died within two years after the onset of their symptoms.

Of the whole group only seven were alive at the time of this writing (March, 1945), one of whom was operated upon only one year ago. One patient survived five years, one patient four years, one patient three years, and three patients two years. All these patients were older than thirty-seven years. They all received nephrectomies.

There was only one classified as of papillary type and the other six were adenocarcinomas.

Howes, in 1944, observed that in a series of fifty-four patients of this type only five survived over three and one-half years without evidence of metastases.

We are indebted to the roentgenologist for the helpful diagnostic evidence leading to incrimination of these malignant kidneys. In the light of our present knowledge the x-ray will have to be our guiding star if we can bring it into use earlier in the patient's illness. Loss of weight doesn't help us. One patient only in this survival group showed any loss of weight. Likewise a palpable mass was seldom helpful for in only one case of the seven was a palpable mass recorded. Pain was a feature in five cases but it was absent in two. The pain was located usually in the back or in the loin. One patient had pain in the right lower quadrant—a dull heavy ache. This pain however had been a complaint for three years preceding operation and hematuria was noticed during the same period of time; yet medical attention was unsought. In these seven cases one patient had hematuria two years, one had it six months, and two had it five months, one three months and one just a few days. Two patients had dysuria, however, and two had frequency of urination.

Turning to the twenty-five patients listed as "died," it was found that in four the history extended back several years as far as sixteen years in a case of papillary carcinoma, ten years in two cases, four years in one case and three years in two cases. This was precious time lost to these patients. Usually the patient is to blame for such delay because of lack of appreciation of the seriousness of his symptoms and also because, in the case of hematuria, the symptom is so many times painless. If pain were the dominant early symptom, patients would come to the physician earlier. When pain was mentioned in this group it occurred in the back or in the flank fourteen times. It occurred in the abdomen five times. There was no pain recorded in six cases. Pain occurs late in the course of the illness as a rule unless calculi are associated with the neoplasm.

One patient gave a "kidney stone" history extending ten years back and his symptoms were

Presented before the Duluth Surgical Society, October 18, 1945, and at St. Luke's Hospital Staff Meeting, November 22, 1945.

referred to the left. At autopsy he had a primary carcinoma of the left kidney and multiple remote metastases but there were no stones found.

A discussion of the roentgen diagnosis is important in these cases. Of the total group consisting of thirty-two cases, eight for sundry reasons were not referred for x-ray examination. Of the remaining twenty-four, thirteen had a positive x-ray diagnosis of kidney tumor. Eight more were regarded by the roentgenologist as "suggestive," which calls for a careful follow-up. Of the remaining three, one had a negative x-ray report and two were diagnosed as hydronephrosis. Obviously the last two required close scrutiny and follow-up also. This gives a high average of diagnostic assistance. Should the excretory urogram fail to reveal convincing facts, a retrograde urogram should be utilized. Melicow made the observation that a retrograde urogram is almost always conclusive in the diagnosis.

Le Conte discussed the antecedents of these kidney tumors and observed that pathologists occasionally find small cortical neoplasms which might exist perhaps for long periods as latent, silent or benign tumors. He mentioned the findings of Kozall and Kirshbaum who reported seventy-seven cases at autopsy, thirty-two of which showed small well encapsulated hypernephroid adenomata in the kidneys. The remaining forty-four were larger and termed hypernephroid carcinoma and some of these were associated with remote metastases.

Unfortunately we are at the present time devoid of diagnostic possibilities to reveal such neoplasms so early in the course of the disease.

Wilms tumor is the usual malignant tumor of the kidney found in children under seven years of age. However, in this series it is of interest that there was one case of Wilms tumor of the right kidney in a man aged sixty. This patient was admitted to the hospital for tonsillectomy in April of 1941. At that time no general examination was recorded. In May of 1943 he was admitted with swelling of the left leg and pain in the region of the left hip. Added to these complaints he had intense itching at various spots such as palms and soles, flexor surface of elbows and forearms which would be followed by localized swellings sometimes as large as hen's eggs. These swellings would last two or three days and then disappear. The urine was normal, hemoglobin 13.25 gms. (93 per cent), white blood cells, 8,850 and 10,950, polymorphonu-

clears 64 per cent, lymphocytes 31 per cent and monocytes 3 per cent. A biopsy of a neck gland was reported "inflammation of a lymphnode (mild)." X-ray revealed hypertrophic changes in the lumbar spine. Skin test using a drop of histamine intracutaneously provoked a large welt one inch in diameter within ten minutes. This disappeared in forty-eight hours. The patient left the hospital after eight days of observation with a tentative diagnosis of sarcoma, carcinoma or Hodgkin's disease and a palpable tumor in the left lower quadrant. A flat plate of the kidneys and bladder was said to be negative on this admission.

His next hospital admission was in June, 1943. The complaint was still of left leg pain and swelling and an increase in the size of a mass in the left groin. Some relief of his symptoms followed x-ray therapy and he left the hospital in five days.

He was hospitalized in August, 1943. This time a urologic examination revealed a bloody fluid coming from the right ureteral orifice. The catheter on the left side passed easily into the ureter but on the right the catheter would advance but a few centimeters. Bilateral retrograde urograms showed a marked filling defect in the right kidney. A probable tumor of the right kidney was diagnosed by Dr. Abrahams, the roentgenologist. At operation this right kidney was removed and the pathologist, Dr. Arthur Wells, recorded his findings as a Wilms tumor. To quote Dr. Wells "This tumor has the predominating elements of a fibro-sarcoma and in only one section did I find any carcinomatous elements. It should be noted that the tumor cells must certainly have been in a benign form as embryonal rests all of this patient's life. Dr. E. T. Bell (University of Minnesota) feels that this is a Wilms tumor." Herman states that such tumors in the adult are pathological curiosities.

There was one child of nine years who had a tumor of the right kidney which was diagnosed pre-operatively. Nephrectomy was done and at the time of operation it was noted that the renal vein was involved by tumor tissue as far as the vena cava. The autopsy report in this case disclosed embryonal adenocarcinoma with metastatic involvement of the liver, lungs, heart and adrenal.

One child, aged three, in this series, showed at operation a horseshoe kidney which was very low in the pelvis. On examination by the pathologist this kidney showed embryonal adenosarcoma.

A still younger child, aged two, was found to

have a tumor of the left kidney, and this was determined in the laboratory to be an adenosarcoma.

Treatment is surgical in the adult cases, the majority of which will be adenosarcomas. In children, where Wilms tumors are usually found, radiation is the treatment of choice. According to Bixler, Stenstrom and Creevy, there are few, if any, five-year survivals in children with Wilms tumor. Where operation is contemplated for malignant kidney, in an adult, pre-operative radiation is advised by these authors on the basis that it stops the growth of the tumor cells themselves. On inoperable cases, life may be prolonged by radiation, and where metastases are present and accompanied by pain, radiation gives relief from pain.

Kerr and Stephens studied thirty-seven adult cases with respect to radiation. Some received radiation preceding surgery, some post operatively and some received no treatment other than radiation. One patient had been followed about ten years; twelve were living at five years. Eight of the twelve patients received radiation pre-operatively. These two men are of the opinion that pre-operative radiation decreases bleeding at the operating table.

Summary and Conclusions

A study of the histories of thirty-two cases of

malignancy of the kidney with nephrectomy reveals many instances in which long periods of time had been allowed to elapse between onset of the symptoms and treatment. Inasmuch as hematuria seems to be the dominant danger signal this should be broadly stressed in public cancer-campaign literature. Patients with blood in the urine should know of the danger of delay and report it to the physician. The physician should proceed at once to identify the source of the bleeding. Even if this could be done in one hundred per cent of the cases there would still remain many late diagnoses. Roentgen examination and urologic investigation constitute our most reliable diagnostic regimen at the present time. We are in great need of measures to promote earlier diagnosis. Radiation seems advisable preceding as well as following operation. Follow-ups in the cases reported revealed that only one patient had survived five years postoperatively. A rare case of Wilms tumor in an adult is included in this report.

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MATERIAL URGE VERSUS MATERNAL URGE

Not so many years ago, a childless woman was looked down on and pitied by her husband, her friends and neighbors. Then as time passed, the pendulum swung to the opposite extreme. This complete change of attitude is illustrated by the remark made by a woman reporter who came to our office at the Maternity Center Association just before the war. Said she: "My editor sent me for a story about maternity, but I can't see for the life of me why people want to have children today. Only morons are having babies."

Then the war came. A baby suddenly became important to millions of young people who hadn't thought much about having children up to that moment. Husbands and wives wanted a living symbol of their love even though they were separated by the oceans of half the globe. They wanted a tie to tomorrow—something of themselves, the value of which was not figured in cash. The birth rate skyrocketed. It was fashionable again to have babies.

Now the war is over. The impelling wartime reasons for having babies have vanished, and things that cash can buy become important again. People are settling down again to the habits of peacetime living and thinking of those shiny new cars, radios, television sets, refrigerators and the countless other expensive gadgets

that have been promised us in our postwar society.

Will a baby continue to be a living symbol of the love of husband and wife for each other, or will a baby become an expensive little nuisance who keeps mother and father from buying that new television set? What is the new attitude going to be about babies? That remains to be seen. We will have to wait and see what the majority of the GIs want when they get home; what the new generation of young people, who were not old enough to go to war, will want when they get married.

That attitude will be set in our next generation of parents by what they have learned about the relationship of babies to their own married happiness. One favorable fact is that young people of this generation have not been content with the stork legend, or the doctor's bag. They have wanted to know the facts—and even if those facts were not provided in their school and college courses, at home or at church—they had the initiative to find out what they could, to put pressure on their teachers and their parents. If they succeed in arriving at a sound attitude about babies and family living, the credit is theirs and theirs alone for theirs is the generation which is causing a breakdown in the centuries old taboos and euphemisms.—*Maternity Briefs*, February, 1946.

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DIPHTHERIA: A REPORT OF SIX DEATHS

HAROLD H. JOFFE, M.D., and ARTHUR H. WELLS, M.D.

DR A. H. WELLS: The several fundamental lessons to be gained by a careful analysis of the following six deaths from diphtheria are mainly the result of many years of inexperience with the vicious nature of this disease. We wish to present a brief clinical and necropsy review of each case with a discussion of this group and a review of some salient features of the general subject of diphtheria.

Case Reports

Case 1.—This fifty-one-year-old white lumberjack was admitted to the hospital thirty-four hours before his death. He complained of a marked difficulty in swallowing and hoarseness, which had come on gradually during the past three days. At the time of admission, he was not even able to swallow water. There was also some difficulty with inspiration, and he had to breathe entirely through his mouth. His temperature was 102°F. and he did not feel very ill at any time. Physical examination revealed a thick gray-white membrane which covered the entire pharynx, including the soft palate, the nasal pharynx, laryngeal pharynx and, possibly, the larynx. However, the swelling precluded looking into the larynx. The examination was otherwise essentially negative. A smear from the pharynx revealed numerous Vincent's angina organisms and rare diphtheroid bacilli. Cultures on Loeffler's media were reported eighteen hours after admission, as containing morphologically and tinctorially typical diphtheria bacilli. These were later proved virulent by guinea pig tests. About thirty hours after being seen by the physician in his office and ten hours after the bacteriological recognition of the disease, the patient was given 30,000 units of diphtheria antitoxin. During his period in the hospital he was constantly cyanotic, more than would be accounted for by the apparent respiratory difficulty present. He managed to phonate some, and he was constantly coughing up a great deal of muco-purulent matter. The cyanosis was thought to be due to sulfadiazine therapy. During his last four hours he became quite cyanotic and his respirations were labored. His pulse reached 112, and respirations 46, during this period. After his death, morphologically typical diphtheria bacilli were found in the original throat smear.

The necropsy reveals an extensive swelling and thick diphtheritic membrane covering the entire larynx (Fig. 1) with almost complete obstruction of the air passage in the larynx, most severe at the vocal cords. There were mild gross and histologic evidences of toxic changes in the myocardium, liver, spleen and kidneys. Otherwise, the examination was essentially negative. It was concluded that the death was due to asphyxia.

Case 2.—This forty-year-old warehouse worker was first seen in his physician's office fifty-two hours before his death. At that time there was a thick, loosely attached membrane over the oral pharynx and tonsils. Soft tissues in the area of the membrane were swollen, leading to the clinical diagnosis of quinsy. An attempt to release pus from the swollen area by the insertion of forceps was made. There was also some swelling below the angles of the jaw on the same (left) side of the neck. About ten hours before death he was admitted to the hospital coughing bloody sputum and suffering from severe pain in his throat and some pain in the chest.

Two hours later a culture was taken from the throat. Besides the areas described, the uvula and soft palate were also covered by a thick grayish membrane which bled easily. There were many coarse râles in both lungs. He was given penicillin and morphine. One half



Fig. 1. Opened larynx with severe injection, swelling and diphtheritic membrane, the latter lifted by forceps.

hour before death his color was considered good, but his pulse was weak. Fifteen minutes before death, he became severely cyanotic, his respirations were quiet and regular, and his pulse was very weak. Diphtheria antitoxin was withheld pending a report on cultures from the pharynx.

The necropsy revealed an extensive diphtheritic membrane extending down from the pharynx through the larynx, trachea, and major bronchi and, in places, into the smaller bronchi. The membrane and swelling in the larynx had caused almost a complete closure of the air passages, while the membrane and swelling in the smaller bronchi undoubtedly greatly hampered the exchange of air in the lungs. Death was due to asphyxia. Toxic changes in the myocardium, liver, spleen and kidneys were relatively mild.

Case 3.—A seven-year-old boy was first admitted to the hospital forty days before his death. He became sick seven days before admission, with general malaise, anorexia, and feverishness, associated with a sore throat and later a swelling in the lateral aspects of the neck. There was continuous fever and some coughing. A great deal of swelling of the tonsils, a marked fetor oris and whitish-gray adherent membrane over the oral pharynx, soft palate, and uvula, were noted. The child was considered very "toxic." There was a bloody

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drainage from the nose and some difficulty in swallowing. His temperature was 101°F., pulse 95, and respirations 22 per minute. He was given 60,000 units of

tion, had a diffuse myocarditis characterized by a generalized swelling and edema throughout the interstitial tissue with slight diffuse fibroblastic proliferation. There

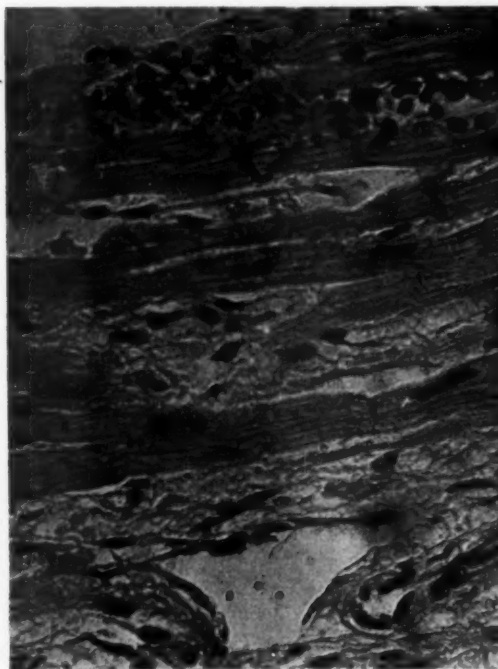


Fig. 2. Myocarditis with focal leukocytic infiltration, toxic degeneration of muscle fibers, swelling and hyperchromatic staining of nuclei and interstitial edema.

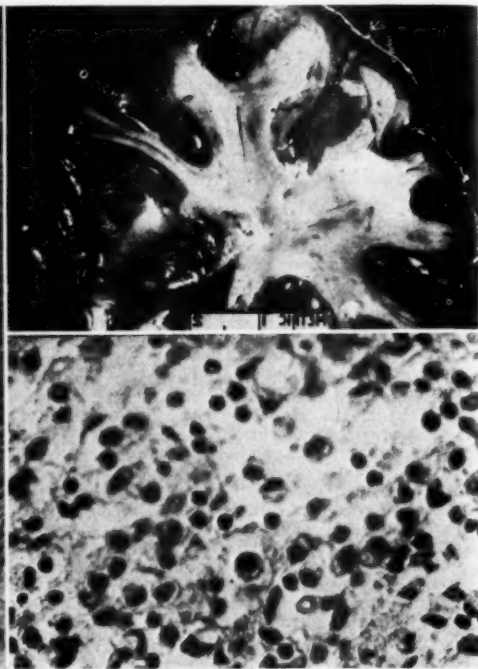


Fig. 3. Focal area of necrosis of cortex.

Fig. 4. New capillaries, fibrous connective tissue and many "scavenger" cells.

diphtheria antitoxin immediately, along with supportive measures and penicillin. His white blood count was 17,300, hemoglobin 15 grams, and the differential count was essentially normal. There was 3 plus albumin in the urine. Throat cultures revealed diphtheria bacilli and for several days his general condition improved and he was finally discharged a month after entrance into the hospital, with some remaining difficulty in swallowing, partial palatine paralysis, nasal twang to his voice and some regurgitation of fluids through his nose. He was again admitted five days before his death, very dehydrated, acutely ill, having difficulty in swallowing and difficulty in breathing. His temperature was 101.6°F., respirations 24, and pulse 120 per minute. There was no voluntary movement of the uvula. Phonation was difficult. Some questionable dullness in the right lower lobe area of the lung and coarse râles throughout the lungs were found. His white blood cell count was 8,400 with 78 per cent neutrophiles; his hemoglobin was 12.5 grams; there was 2 plus albumin in his urine. An x-ray of the lungs led to the conclusion of pneumonia with associated atelectasis in the medial portion of the right lung. Although his temperature gradually returned to normal, his pulse remained high. He was given oxygen for his cyanosis. His condition improved considerably, so that he could breathe freely and get along without oxygen until, suddenly, one-half hour before his death, his breathing became more labored. There was increase in cyanosis without apparent obstruction to inspiration. Involuntary urination was noted, and he suddenly stopped breathing.

The necropsy revealed an unusually firm and remarkably pale myocardium which, on microscopic examina-

tion, was also a lymphocytic and monocytic patchy infiltration with occasional neutrophils, generally located about degenerated cardiac muscle fibers (Fig. 2). There was no Zinker's degeneration. A most remarkable area (3x6 c.m.) of apparent necrosis with extreme pallor (Fig. 3) confined to the cortical tissue just posterior to Broca's area on the left side, was found in the brain. Histologically (Fig. 4), the cortical nerve cells had completely disappeared from the involved region and was replaced by recently formed capillaries, loose connective tissue, many monocytic scavenger cells, and occasional lymphocytes. A third finding was an approximate two-thirds atelectasis of the lungs, associated with a mild, patchy, terminal bronchopneumonia. It was concluded that the patient had died, primarily, because of a combination of his diphtheritic myocarditis and pulmonary atelectasis of undetermined cause. The diphtheria infection itself had long been cured.

Case 4.—This six-year-old girl was admitted to the hospital 18.5 hours before her death with a sore throat and headache of four days' duration. She apparently had been coughing for about two weeks but had not been very ill. Four other children in the same family had sore throats; three were attending school. Her pulse was 150; and respirations 30 per minute; temperature was 101.6°F. She appeared acutely ill, with a flushed face, obviously difficult breathing, nasal congestion and watery discharge from the nostrils. Oral pharynx and tonsils were covered by a thick grayish adherent membrane. There was severe fetor oris. The lateral aspect of the neck and cervical glands were swollen. There were stridulous râles in the lungs, particularly at the right base. She was immediately given 60,000 units of

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diphtheria antitoxin. Penicillin, sulfadiazine, and supportive measures were used. She had received antiphtheria immunization by a three-injection method two years previously. Throat cultures revealed diphtheria bacilli. Two hours after admission she was having considerable respiratory difficulty and was quite cyanotic. A tracheotomy resulted in immediate relief. She was very restless and did not sleep more than half an hour during the entire night. Her temperature reached 106°F. There was much exudate coughed through the tracheotomy tube. She was breathing satisfactorily one half hour before her death, and became cyanotic with increasing rapidity of respirations and pulse five minutes before death. Her pulse had gradually risen while in the hospital from 130 to 168 per minute and her temperature from 101.6°F. to 106°F.

The necropsy led to the conclusion that this girl died as a result of "toxemia" mainly through its effect on her heart muscle. However, there was no inflammatory change in the heart. There was considerable swelling and membrane formation in the larynx with rather severe obstruction. No obstruction or membrane formation was found below the tracheotomy opening. There was a mild bronchopneumonia.

Case 5.—This four-year-old boy was admitted to the hospital two hours before his death. The child's father had recently returned from the European theatre of the war. His parents explained that he had had redness and swelling of his ear for five days. During this period he had coughed some and complained of a sore throat. He had not been able to eat or drink, apparently because he could not swallow. A physician had been called but was too busy to make a house call. Another physician visited two days before the child's death and made a diagnosis of mumps prescribing cold packs to the neck. Physical examination revealed an acutely ill child in extremis. He was cyanotic. His temperature was 102.4°F. and pulse 96. There was much wheezing over the trachea and bronchi, labored inspiration, dry, cracked tongue and lips, foul and fetid odor of the breath. Inspiratory effort was pronounced and there was a dirty, grayish, adherent, thick membrane over the tonsils, uvula and pharynx. There was swelling below the angles of the jaw and the lateral aspects of the neck (Fig. 5). There was none in front of the ears in the parotid area. He was given 30,000 units of penicillin intravenously immediately after admission and an hour and fifteen minutes later he received 20,000 units of diphtheria antitoxin intramuscularly. Oxygen therapy and other supportive measures were instituted. His inspiration continued labored and was apparently partially obstructed. His pulse became weak and rapid. He became much weaker. His pupils did not react to light; cyanosis became more marked; respirations more forced; and the pulse was unobtainable, shortly before respirations ceased.

The necropsy revealed only mild diphtheritic involvement of the upper portion of the larynx without interference with its lumen. Various internal organs had moderate toxic changes, seen both grossly and microscopically. Death was considered to be the result of "toxemia," particularly as it affected the myocardium.

Case 6.—This nine-year-old boy, a brother of the child in Case 5, was admitted on the same day with his brother. He died six days later. He had been sick for two and one-half days before admission with a sore throat and headache. There had also been severe malaise, anorexia, dysphagia, nasal discharge, and some apparent respiratory difficulty. His temperature was 100.8°F., pulse 88, and respirations 28 per minute. He was considered severely and acutely ill. There was an incomplete, dirty, purulent membrane over the oral pharynx, uvula and tonsils. His breath was very foul. The lateral aspects of the neck below the angles of the jaw were swollen. He was given 40,000 units of diphtheria antitoxin intravenously immediately along with penicillin and other therapy, the 40,000 units of antitoxin being repeated

the following day and again on the third hospital day. He seemed to show gradual improvement during the fourth and fifth hospital days. On the day before death, respiratory obstruction developed, and a tracheotomy was performed. He breathed much easier and cyanosis decreased. He coughed up considerable exudate. He



Fig. 5. "Bull neck" due to diphtheria.

had been given over 6,000 c.c. of parenteral salt solution during five days. The inaccurately measured daily output during this period totalled 1,000 c.c. Blood pressure and blood urea measurements were not performed.

The necropsy revealed approximately 75 per cent atelectasis of both lungs and a grade IV pulmonary edema. There was practically no aerated lung tissue remaining. There was, in addition, a moderate edema throughout the subcutaneous tissues and the soft tissues of both thorax and abdomen. The mechanism of death might include poor aeration of the lungs due to (1) respiratory muscle weakness, with resultant severe atelectasis of lungs and (2) excessive sodium chloride intake for this acutely ill child, with resultant pulmonary edema and general anasarca.

Discussion

Among the more important lessons to be learned in this small group are:

1. Suspect diphtheria with every membranous pharyngitis.
2. Do not let large numbers of Vincent's angina organisms in the direct smear interfere with the careful exclusion of diphtheria bacilli.
3. Treat for diphtheria without waiting for laboratory culture reports if the case looks very suggestive.
4. The patient with diphtheria need not seem very ill, even within a short period before death.
5. The diphtheria patient has a good chance of developing respiratory tract obstruction and must be watched closely for it.
6. This obstruction may exist without the usual sound effects.

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7. The measurement of vital capacity may be indicated in certain cyanotic patients.

8. Laryngoscopic examination and aspirations should be used freely.

9. It requires only a few minutes to cause death by asphyxia in diphtheria.

10. In malignant diphtheria, larger dosages of antitoxin are indicated.

11. Precious time may be lost between the time of diagnosis and the institution of therapy.

12. Daily parenteral saline exceeding 700 c.c. in adults and less in children may cause death by pulmonary edema, in these acutely ill patients. Give glucose solutions when parenteral water therapy is indicated.

13. A "bullneck" of diphtheria is not mumps, but a serious prognostic sign.

14. Not all peritonsillar swellings are due to quinsy.

15. The postdiphtheritic patient with paralysis must be watched carefully for a long period in the hospital.

16. Diphtheria immunization alone does not always protect against diphtheria.

17. Expect and treat diphtheria early, in diphtheria contacts.

Dr. H. H. JOFFE: The following discussion of diphtheria is not an original investigation, but rather a brief résumé of some of the literature on the subject, in which an attempt had been made to clarify some of the puzzling clinical variations and pathogenicity of the disease.

Bacteriology

There are numerous Gram positive rods with tendency to club and pointed forms which are widely distributed in nature and as a rule are non-pathogenic. This group of organisms are designated "the diphtheroid group of bacteria" and are morphologically closely related to the one species *Corynebacterium diphtheriae* called a "true diphtheria organism."⁶ This organism in contradistinction to the diphtheroid group is pathogenic by virtue of its toxin and the cause of clinical diphtheria. Many diphtheroids are found in the human throat and the contamination of cultures increases the difficulty in differentiating them on smear from the true diphtheria organism. In this connection, it was of interest to learn that the State Department of Health Laboratories in Minnesota⁶ do not routinely perform virulence tests on the organisms which are morphologically diphtheria bacilli in cultures from patients clinically diagnosed diphtheria unless the organisms persist in the nose and throat cultures for a period of at least forty days following the first symptoms. The inaccuracy of morphologic diagnosis alone is illustrated in the results of virulence tests at the State Laboratory during 1945. Of 892 such tests run on morphologically typical or suggestive bacilli from a variety of sources, only 382 were proved virulent.

The difference in the colony appearance on tellurite chocolate agar and the comparative variation in the clinical picture of the disease resulted in the recognition

of three types:² mitis, intermedius and gravis; although a small percentage of strains do not closely resemble any of these types. The mitis strain is usually associated with clinically mild diphtheria and death, if it does occur, is mostly in infants and is due to either obstructive phenomena or pneumonic complications or both. The intermedius strain closely resembles the gravis type in the clinical symptoms produced, but disappears more rapidly in convalescence and does not have the tendency towards epidemic spread. The gravis type has a greater pathogenicity, deeper penetrating power of tissues and greater epidemic potency.^{7,8}

The description of the malignant diphtheria is not new and can be found in the writing of Hippocrates and those of the 2nd century A.D. Many epidemics have occurred in various parts of the world with² 1,000,000 cases reported on the European continent, exclusive of Russia, in 1943 with a mortality rate of not less than 5 per cent. Diphtheria reached epidemic proportions during this present war and was the¹⁰ leading epidemic disease on the European continent as a cause of both morbidity and mortality. The rate per 100,000 of population, rose considerably in many of the European countries between 1939 and 1943:

Rate per 100,000 of population ²	1939	1943
France	35.9	118.7
Netherlands	16.6	638.9
Norway	1.8	752.8
Germany	180.9	287.1
Britain	114	84

It can be assumed that the marked increase in the incidence of diphtheria was initiated by war conditions. In the case of Britain it can be assumed that the strict vigilance of sanitary conditions may be one of the causes to account for the decrease in the incidence.

In this country, a small epidemic occurred at Belair, Md., in 1936, and a severe outbreak in Halifax, Nova Scotia in 1941. A malignant type has appeared in Germany and has cast some doubt as to the efficacy of the supposedly satisfactory and conventional method of management. In the Halifax epidemic¹⁰ 69.2 per cent of cases occurred in the age group over fifteen years. As high as 80 per cent of the adults in the general population were susceptible as measured by the Shick test.

It seems probable that the numerous severe outbreaks of diphtheria described in Europe, which were refractory to serum therapy were due to the gravis type of diphtheria bacilli. This refractory character of the diphtheria stimulated many investigations. Anderson and associates¹² at Leeds, England, suggested a causal relationship between the gravis type and malignant diphtheria. Although this received some confirmation, it was noted that in other areas numerous strains which were culturally typical of the gravis type were avirulent as shown by ordinary laboratory tests.³

In order to explain the factors involved in the production of malignant diphtheria, the following equation has been suggested:

$$\frac{\text{Toxicogenicity of } C. \text{ diphtheria} + X}{\text{Host resistance}} = \text{Malignant diphtheria}^3$$

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The possible factors which could be represented by X are: (1) the symbiotic existence of hemolytic streptococci; (2) the occurrence of an alteration in the strains of *C. diphtheriae* prevalent in an area which would cause them to acquire a greater pathogenicity; (3) unknown toxic substance other than that of *C. diphtheriae*; (4) individual immunological response to infection. There is no evidence to prove that change of virulence is likely to occur and the possibility of unknown toxic substances must remain as conjectures until further proof is available.³ The X factor is best expressed by Park, Williams and Krumwiede. They state "when other pathogenic bacteria are associated with diphtheria bacilli they mutually assist one another in their attacks on the mucous membrane, the streptococci being particularly active in this respect, often opening the way for the invasion of the diphtheria bacillus into the deeper tissues or supplying needed conditions for the development of its toxin. As these septic infections due to the pyogenic cocci are in no way influenced by the diphtheria antitoxin, they frequently are the cause of the fatal termination."³

The Minnesota Department of Health statistics for the last decade⁶ revealed 40 per cent of the diphtheria was in patients over ten years. The morbidity and mortality from the disease had been falling steadily until 1943, since when there has been a gradual rise.

Clinical Recognition

The salient features of malignant diphtheria may be summarized:¹²

1. The symptoms are sudden in onset and very severe.
2. There is frequently an associated cervical cellulitis, giving rise to the "bull neck" appearance.
3. Due to the intense swelling of the pharyngeal parts, respiration is of a snoring type.
4. Thick membrane covers the tonsils, anterior pillars and uvula and at times extends onto the mucous membrane of the hard palate and cheeks.
5. Tonsils may be so swollen as to compress the uvula.
6. Membranes are grayish in color or even darker with blackish hue due to hemorrhage following necrosis of the underlying tissue with development of gangrenous areas.
7. Involvement of the nasal mucous membrane is common with nasolabial excoriations.
8. Temperature is generally higher than the average case and runs a septic course.
9. Evidence of circulatory failure appears early.

In a report of eighteen cases on a United States Naval Hospital ship, ten were originally diagnosed as tonsillitis at the onset of their illness, and one case was mistaken for a peritonsillar abscess, which was incised.⁸

Treatment

The efficacy of the prophylactic use of standard toxoid and alum-precipitated toxoid is generally accepted. The present increase in the frequency of diphtheria and the

possible influx of more virulent strains from overseas necessitates a greater use of "booster" or activating doses of toxoid among all age groups of our present population. The Minnesota Department of Health recommends that all children who have been immunized early in childhood should receive booster doses of toxoid before they enter school. In a recent report, Karelitz⁵ found 28.6 per cent of 1,283 individuals in the armed forces were Shick positive. These received a booster dose of toxoid, and within four months a high percentage became Shick negative.

Beckman¹ demonstrated a direct relationship between the mortality and a delay in the administration of antitoxin, from an expected mortality of 1.5 per cent on the first day of illness to 14.92 per cent on the fifth day. Norris⁸, in an epidemic of eighteen cases, found that where the antitoxin was given within three days of the onset no paralysis developed, whereas, in the cases treated after this period the antitoxin did not prevent paralysis. The more serious types of diphtheria should undoubtedly receive higher dosages of antitoxin. According to Weinstein¹⁴, the degree of "bull neck" bears a direct ratio to the degree of toxication, and doses as great as 160,000 units of antitoxin are of no avail once the condition has fully developed. In a group of thirty-six deaths from diphtheria, Togasaki¹³ reported twenty-two had required tracheotomy. Bronchopneumonia and toxic myocarditis headed the list of complications.

Clinical and experimental^{7,12} proof has been submitted that the use of sulfonamides and penicillin do not affect *B. diphtheriae* directly. However, these drugs may be very efficacious in their prophylactic and therapeutic effect upon streptococci and other organisms, which may well have a symbiotic relationship with the diphtheria organism.

Conclusion

It is obvious that the low incidence of diphtheria in this community has led to a feeling of security and a depreciation of ability to recognize and treat this disease. There undoubtedly has developed large numbers of individuals, particularly among adults, who are now susceptible to diphtheria and may become the fuel for an epidemic of a malignant type of diphtheria, possibly brought to this country by carriers among our armed forces. The diagnostic and therapeutic lessons gained from a study of the reported six cases of diphtheria have been summarized under Discussion. Some of the recent trends in the literature concerning epidemiology, malignant diphtheria, practical bacteriology, activating or "booster shots," and the importance of early antitoxin therapy, are briefly reviewed from the literature.

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◆ HISTORY OF MEDICINE IN MINNESOTA ◆

NOTES ON THE HISTORY OF MEDICINE IN FILLMORE COUNTY PRIOR TO 1900

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Rochester, Minnesota

(Continued from March issue)

Physicians in Fillmore County

Physicians were in Fillmore County, of course, as early as 1852, although dispensers of propaganda in encouragement of colonization gave them scant recognition. From the beginning, Minnesota, first a territory and, in 1858, a state, was proclaimed to yield to no region in the world in point of salubrity of climate. In the fifties and sixties, when the state government was actively encouraging immigration, newspapers throughout Fillmore County, as elsewhere in the state, published comments like this: "Hardly a day passes without our seeing numerous wagons loaded with men, women and children traveling along our roads. Many from Iowa, Illinois, Indiana and other states. The healthy air of Minnesota will take off that sickly aguish look of most of them... let them come! There is room for all—and more too." As to medical practitioners, J. W. Bishop, in his *History of Fillmore County*, of 1858, said, in part: "Thoroughly qualified physicians walk among us 'harmless as doves' in this horribly healthy country!" In those early years the general idea was that the physician's chief usefulness lay in surgical cases and in obstetrical cases (complicated) and in attending such patients as might contract chickenpox, measles, smallpox or diphtheria.

The need and opportunity for physicians soon were recognized, however, and although statistics have not been available for comparison of Fillmore County with other counties in number of physicians, it seems probable that with the possible exception of Ramsey and Hennepin Counties, which had as drawing cards St. Paul and St. Anthony (Minneapolis) at the head of navigation on the Mississippi River, this large southern County of Fillmore, lying in one of the main paths of immigration, received in the nineteenth century as large a representation of medical practitioners as any other county in the state. Certainly there is record, scant or full, of many physicians, permanent or temporary. Scanning of such old newspapers of various years as have been available to the writer has yielded, in addition to those learned from other sources, the names of sundry practitioners who remained in the county probably a few months or a year or two and were heard of no more. If such record is indicative, there must have been, over a period of decades, many more than are mentioned herein of this unsettled type, who were frankly itinerant or who with some appearance of stability moved from town to town in the county before going on into other sections of the state or the country.

Among the total number of physicians, especially of those who came in the fifties, sixties, seventies, and into the early eighties, there undoubtedly were

men of little knowledge and less training who had no legitimate excuse to call themselves "doctors." An occasional veterinarian found it expedient to treat human patients as well as domestic animals and poultry; in fact, physicians occasionally found it well to treat domestic animals. There were vendors of patent medicines, hydrotherapists, bone-setters, herb doctors (botanic and physio-medical schools were the forerunners of eclectic medical institutions, although "herb doctors" probably had not been within their portals). There were honest representatives of the preceptor system alone and of the preceptor system combined with instruction or lectures at medical colleges: eclectic, homeopathic and regular (in the early period *allopathic* was used often to indicate the regular system of medicine and surgery), of one or the other of which many were graduates. Some of the finest practitioners came from universities and medical schools of Norway, Sweden, Holland, Germany and Britain and exerted a constructive influence on the growth of medical practice in the new land; some of the worst purported to come from foreign schools. There were many representatives of the various eclectic colleges of Cincinnati and Chicago and of the homeopathic schools, particularly the Hahnemann Medical College of Chicago in its different alliances. Worthy of mention, there were graduates of some of the smaller medical schools of New England and neighboring states which supplied the Middle West with perhaps her soundest medical pioneers. Among these institutions, in Vermont, were the University of Vermont and the Castleton Medical College (Vermont Academy of Medicine); in Maine, the Medical School of the University of Maine and Bowdoin Medical College; in New York, the College of Physicians of the Western District of New York, at Fairfield, the Geneva Medical College, the Albany Medical College and the University of Buffalo Medical College. These schools at least tried to set standards high and to insist on good preliminary education. There were a few men from the greater medical schools of the Atlantic seaboard and from McGill University in Montreal. Graduates came also from the schools of the Middle West: the Miami Medical College (later the Medical College of Ohio), Rush Medical College, the Chicago Medical College (later the Medical Department of Northwestern University), the Medical School of the University of Michigan, the College of Physicians and Surgeons of Keokuk (Iowa), and the Missouri Medical College, to name only a few. Beginning in the eighties came men from the schools of Minnesota: the Minnesota College Hospital (later the Minnesota Hospital College), the Minneapolis College of Physicians, the Minnesota Homeopathic Medical College and the St. Paul Medical College, and, finally and chiefly, the Medical Department of the University of Minnesota, after the establishment of which medical education became a function of the state. As told by many writers on medical history in Minnesota, two of the early medical schools that had functioned in Minneapolis and St. Paul (the Minnesota Hospital College and the St. Paul Medical College) joined in forming the medical department, first known as The College of Medicine and Surgery, of the university; others subsequently united with the university school; others passed out of existence.

A constantly recurring pattern among the physicians who came in the earlier decades of this second half of the nineteenth century was the birth and education abroad or in the eastern United States and the trek to the Middle West broken into stages by residence of years, perhaps, in one or more places en route. Occasional mention is seen of practitioners among the earliest of the pioneer physicians who were of such decided personality and opinion that they antagonized their patients and thereby lost in material benefit, but whatever their temperaments they all must have been strong characters, because no weakling would

have chosen to break trail in a new country of crude living conditions that still was not free from threat of attack by Indians.

Because the physician's relationships were with settlers in large communities, in townships rather than in villages alone, the townships of Fillmore County are named here, from east to west in four tiers from south to north. In the first and southernmost tier, bordering on Iowa, are Newburg, Canton (originally Elyria), Harmony, Bristol, York and Beaver Townships; in the second, Preble, Amherst, Preston, Carimona, Forestville and Bloomfield; in the third, Norway, Holt (Norway and Holt together once were Douglas), Carrolton, Fountain, Fillmore and Spring Valley; and in the fourth and northernmost tier, Rushford, Arendahl (early a part of Rushford), Pilot Mound, Chatfield, Jordan and Sumner.

It is difficult to say who was the first physician* so-called, in Fillmore County, but of the established practitioners of unquestionably high repute, probably the first was Dr. William C. Pickett, in 1852, one of the sons of a family who had pioneered from New York to Indiana some years earlier. Dr. Pickett shortly returned with his traveling companions to Indiana and in the following summer came back to Fillmore County with a group of four Pickett families and was the moving spirit in the founding of Carimona Village in Carimona Township. The next few who came, between 1853 and 1858, were: Horace W. Pickett and Henry L. Wilson to Carimona; Nelson W. Allen, Refine W. Twitchell, Augustus H. Trow, D. N. Morse, Isaac S. Cole and Luke Miller, to Chatfield, Chatfield Township; Erastus Belden and Wallace P. Belden, father and son, to Hamilton, Sumner Township; J. Early, H. Gilbert and William H. Dean and, possibly, T. E. Loop, to Spring Valley, Spring Valley Township; Lafayette Redmon and John W. Crees to Preston, Preston Township; H. Curtis to Fillmore, Fillmore Township; Robert A. Sturgeon and Thomas Little to Elliota and James M. Wheat to Lenora, both villages in Canton Township.

The roster of physicians of Fillmore County which follows is submitted with full consciousness of its obvious defects. The men are named alphabetically in the known or estimated decades of their arrival, with the first known village and township of the practice of each. It should be stated that some of these men were born in the county and spent their entire lives there with the exception of years given to medical study elsewhere. Others came there as children of pioneer parents, went away for their medical schooling and returned to practice. Still others, who came as physicians from the outside, spent a professional lifetime in one place. Many, of all groups, changed locations within the county once or several times, and many others resided in the county a relatively short time. Of some the exact date of arrival is known, of others it can be said only that they arrived in the fifties, or in the sixties before 1866, for instance, or that they may have been long in the region but not in Fillmore County until the seventies or eighties or some other period. In the sketches these facts will be made clear whenever possible. And, although the statement is not truly germane, it may be said that other men, like John C. Nelson, later of St. Paul, who came under the influence of the pioneer physicians and who received inspiration to study medicine while working in the early well-known drugstores of Fillmore County, did not return to the county after qualifying as physicians but achieved notable medical careers elsewhere.

*Although individual physicians are mentioned in this narrative, by decades of arrival and in connection with the organization and development of medical practice in the county, biographical detail is reserved for the series of sketches which are appended and which to some extent carry the thread of the story, showing forth manners, customs and events.

HISTORY OF MEDICINE IN MINNESOTA

ROSTER OF PHYSICIANS IN ORDER OF ARRIVAL BY DECADES†

1852-1899

Name	Village	Township
1852-1859		
Allen, Nelson W.	Chatfield	Chatfield
Belden, Erastus	Hamilton	Sumner
Belden, Wallace P.	Hamilton	Sumner
Cole, Isaac S.	Chatfield	Chatfield
Coleman, W. F.	Chatfield	Chatfield
Crees, John F.	Preston	Preston
Curtis, H.	Fillmore	Fillmore
Dean, William Henry	Spring Valley	Spring Valley
Early, J.	Spring Valley	Spring Valley
Everts, Sylvanus	Rushford	Rushford
Gilbert, H.	Spring Valley	Spring Valley
Little, Thomas	Elliot	Canton
Mac, Adolph	Rushford	Rushford
Masse,—(Morse?)	Chatfield	Chatfield
Miller, Luke	Chatfield	Chatfield
Morse, D. N.	Chatfield	Chatfield
Pickett, Horace W.	Carimona	Carimona
Pickett, William C.	Carimona	Carimona
Redmon, Lafayette	Preston	Preston
Sturgeon, Robert Anderson	Elliot	Canton
Trow, Augustus Howland	Chatfield	Chatfield
Twitchell, Refine Weekes	Chatfield	Chatfield
Wheat, James Madison	Lenora	Canton
Wilson, Henry L.	Carimona	Carimona

1860-1869

Bingham, —	Lanesboro	Carrolton
Burkaus, —	Lanesboro	Carrolton
Case, Orson A.	Preston	Preston
Dickson, John C.	Chatfield	Chatfield
Donnelly, M.	Lanesboro	Carrolton
Eighmy, J. W.	Hamilton	Sumner
Everts, Thomas Heywood	Rushford	Rushford
Graves, J. A.		
Grover, Henry C.	Rushford	Rushford
Haslam, William	Chatfield	Chatfield
Hoyt, Robert	Lenora	Canton
Huffman, —	Preston	Preston
Jones, J. R.	Lanesboro	Carrolton
Kierland, Elling P.	Rushford	Rushford
Kierland, Peter E.	Rushford	Rushford
Kingsbury, E. J.	Spring Valley	Spring Valley
Kingsbury, W. B.	Spring Valley	Spring Valley
Loop, T. E.	Spring Valley	Spring Valley
Moore, Russell Lucretius	Forestville	Forestville
Morey, J. J.	Spring Valley	Spring Valley
Morrison, —	Chatfield	Chatfield
Murray, —		
Plummer, Albert	Hamilton	Sumner
Reynolds, Lewis	Granger	Bristol
Robbins, Calvin Hubbard	Fillmore	Fillmore
Ross, John Angus	Preston	Preston
Thomas, H.	Chatfield	Chatfield
Viall, Lyman	Spring Valley	Spring Valley
Wallace, S. W.	Preston	Preston
Whitman, Alvah Fancher	Spring Valley	Spring Valley
Willis, G. M.	Carimona	Carimona
Wilson, —	Chatfield	Chatfield
Wold, O.	Rushford	Rushford

1870-1879

Bemis, J. G.	Lanesboro	Carrolton
Bendeke, Karl O.	Rushford	Rushford
Britts, David A. S.	Lanesboro	Carrolton
Craig, N. S.	Granger	Bristol
Denninger, Paul G.	Spring Valley	Spring Valley
Fate, Jesse C.	Chatfield	Chatfield
Grannis, E. H.	Chatfield	Chatfield

†Full names are given when known.

HISTORY OF MEDICINE IN MINNESOTA

Hall, Thomas Edmund
Haskins, Henry Howard
Hoyt, Robert W.
Hvoslef, Johan Christian
Jacobson, Charles H.
Jones, Henry
Lathrop, Don J.
Love, George Allen
Magelssen, Jacob Wright
Mecklenberg (See Van Mackelenberg)
Phillips, James Henry
Pingree, M. G.
Powell, David Frank
Powers, Albert Wentworth
Ring, Hogan, J.
Sackett, Reuben Nathaniel (early;
decade not certain)
Spencer, Reuben Farmer
Thornhill, French W.
Trow, Milton Augustus
Trow, William Howland
Van Mackelenberg, Frans Josef
Von Lackum, P.
Wagner, Charles H.
White, A. C.

1880-1889

Atkinson, —
Bell, Howard
Coates, William Bicknell
Darey, J. Herbert
De Cousens, John R.
Halloran, Florence John
Hammer, —
Hoftoe, Ole T.
Johnson, J. Ross
Keller, Francis
Kendall, Herbert
Knowles, S. H.
Leprohon, —
Miller, —
Meredith, Simeon Paul
O'Brien, D. F.
Onsgard, Lewis K.
Parker, Wellington Daniel
Powell, George
Powell, William A.
Pritchard, Donald Bannerman
Sackett, Jay Le Roy
Schoolcraft, —
Stephens, Aaron Marshall
Tamblin, Jerome B.
Timmons, Isaac Whittington
Vance, G. H.
Veenschoten, T.

1890-1899

Bakke, Peter Halstensen
Cady, Charles William
Campbell, George Elmore
Carr, S. M.
Conkey, Robert L.
Cooper, Charles McHenry
Drake, Frederick Arthur
Eby, John Robert
Gowdy, Francis Adelbert
Heiberg, A. O.
Hunt, Thomas W.
Jackson, George E.
Keeney, Mrs. Emma Adeline
Kendrick, William Nassau
Lommen, Andreas Pederson
MacDonald, Alexander*
Meidell, Roy A. O.

Lanesboro
Elliot
Lenora
Lanesboro
Preston
Granger
Granger
Whalan
Rushford
Wykoff
Spring Valley
Lanesboro
Fountain
Whalan
Chatfield
Etna
Spring Valley
Chatfield
Fillmore
Forestville
Preston
Spring Valley
Preston
Carrolton
Canton
Canton
Carrolton
Preston
Bristol
Bristol
Holt
Rushford
Fillmore
Spring Valley
Carrolton
Fountain
Holt
Chatfield
Bloomfield
Spring Valley
Chatfield
Fillmore
Forestville
Preston
Spring Valley
Preston

Chatfield
Lanesboro
Harmony
Granger
Lanesboro
Chatfield
Pilot Mound
Fountain
Spring Valley
Preston
Spring Valley
Preston
Lanesboro
Waukelee
Spring Valley
Canton
Harmony
Spring Valley
Lanesboro
Lanesboro
Rushford
Lenora
Chatfield
Lanesboro
Chatfield
Fillmore
Greenleafston
Chatfield
Carrolton
Harmony
Bristol
Carrolton
Chatfield
Pilot Mound
Fountain
Spring Valley
Preston
Spring Valley
Preston
Carrolton
Carimona
Spring Valley
Canton
Harmony
Spring Valley
Carrolton
Carrolton
Rushford
Canton
Chatfield
Carrolton
Chatfield
Fillmore
York

Preston
Mabel
Wykoff
Pilot Mound
Canton
Chatfield
Lanesboro
Spring Valley
Granger
Rushford
Lanesboro
Chatfield
Spring Valley
Spring Valley
Mabel
Chatfield
Preston
Newburg
Fillmore
Pilot Mound
Canton
Chatfield
Carrolton
Spring Valley
Bristol
Rushford
Carrolton
Chatfield
Spring Valley
Spring Valley
Newburg
Chatfield

*The name of Dr. Alexander MacDonald is included because, although he was not in Fillmore County until 1901, he had been in southern Minnesota since 1883, and he has been (1944) in Chatfield forty-three years.

HISTORY OF MEDICINE IN MINNESOTA

Nass, Hildus Augustinus O.
Onsgard, Christen K.
Ray, Charles Wilbur
Richardson, Walter Earl
Shipman, Louis Dwight
Thompson, Edward R.
Utley, John Darwin
Walker, Charles Carroll

Mabel
Rushford
Canton
Preston
Preston
Preston
Harmony
Spring Valley
Chatfield

Newburg
Rushford
Canton
Preston
Preston
Preston
Harmony
Spring Valley
Chatfield

Intercounty and Interstate Practice.—In all decades physicians extended their practice into several townships and into neighboring counties and even into neighboring states. Fillmore County practitioners were called into all contiguous counties in Minnesota and into Howard and Winnesheik Counties of Iowa, and men of those counties were in turn known in Fillmore County. Notably, Dr. G. M. Alsdurf, an eclectic physician and surgeon, an early arrival at Le Roy, Mower County, and a few years later at Spring Valley, Fillmore County, began at once to treat the sick of a widespread territory; "happening to strike the place (Le Roy) just in one of those terrible scourges, an epidemic of diphtheria, he had business immediately and went right into an extensive practice, in the counties of Mower and Fillmore, in Minnesota, and Howard and Mitchell, Iowa." John Lewis Martin, physician and preacher, chiefly of Dodge County, but also of Olmsted, Jackson and Mower Counties, is said to have practiced in Fillmore County. He has been described as a small, wiry, bewhiskered man, dignified and respected, who rode on horseback to make his professional calls and to relieve in the pulpits of his brother clergymen. Of a much later generation, Henry S. Plummer, native of Fillmore County, later of Mower County and Olmsted County, in his early years as a physician practiced from Mower County with his father, Dr. Albert Plummer (Fillmore County, 1869-1893; Mower County, 1893-1911), into Fillmore and Olmsted Counties. From Fremont, Winona County, William Shaw Morrison, a pioneer physician for many years maintained an office in Chatfield also and on two days a week saw patients there.

From various other counties in Minnesota in the eighties and nineties the following physicians filed their licenses in Fillmore County, although record has not been noted that they ever resided there: John T. Billington, Yellow Medicine County, 1887; N. D. Satterlee, Jackson County, 1888; Halfdan Slippert, Hennepin County, 1897; George B. Hamline in 1898 and John Edmund Doran in the same period; and Herman Russell, Olmsted County, in 1899.

From Iowa, Fordyce Worth, of Hesper, Winnesheik County, long practiced in the vicinity of Mabel, Newburg Township, and was licensed in Minnesota in 1887. Other Iowa physicians who were licensed to practice in Fillmore County were John W. Reed, Frank Fremne and Daniel M. Sage, in 1884, and Francis J. Ledbrook, in 1896, all of Howard County. From Wisconsin were registered Thomas Thorkelson, of Trempeleau County, in 1896, and George A. Morley, of Juneau County, in 1898.

In the series of biographical sketches to come, notes have been included on three of these men from outside Fillmore County, who no doubt were typical of many.

(To be continued in May issue)

President's Letter

EXCELLENT ANNUAL MEETING FORECAST

YOUR State Meeting this year is to be the acme of all state medical meetings, probably surpassing in variety and excellence all previous or other meetings except that of the American Medical Association. From scientific discussions to commercial exhibits, the meeting promises features worthy of the history-breaking attendance which seems assured.

That it is to be *your* meeting has been the primary objective of both the Executive Secretary and the Program Committee. Questionnaires were sent by the Executive Secretary to every military and civilian member of the Association. Essentially these asked only two questions: "What scientific subjects do you wish presented?" and "How can the State Meeting best be planned and arranged for your needs or desires?" From the response to these questions, the Program Committee and Executive Secretary designed and arranged the entire conclave. So, your needs, desires and requests were the nucleus from which the meeting was fashioned.

On the scientific program are to be found outstanding papers and lectures by leading authorities in the various fields, round table discussions conducted by one or more prominent clinicians, special sectional sessions with physicians of national renown as guest speakers, and actual demonstrations of the most up-to-date technics, procedures and methods. Subjects on the program of scientific lectures include: surgery of the gall bladder and pancreas, coronary disease, brucellosis, malaria and other tropical diseases, sulfonamides, penicillin and streptomycin, surgery of thrombophlebitis and embolism, obstetrical shock, third stage of labor, the Rh factor and transfusions, "punch" and suprapubic prostatectomy, endocrinology, intervertebral disc x-ray study, and a whole symposium on hospital subjects.

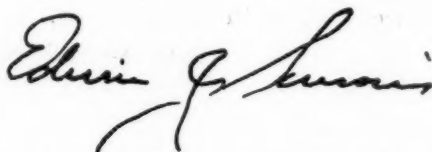
For round table luncheons such topics as the following have been arranged for full and free discussion by all present: thiouracil, allergy, burns, esophageal obstructions, amino acids, arthritis, anesthesia, varicose veins, gall-bladder surgery, dermatology, ulcerative colitis, rheumatic fever, tuberculosis and poliomyelitis. Here is a place to present your clinical problems for a wealth of consultative opinion.

Special sectional sessions of the Minnesota Academy of Ophthalmology and Otolaryngology, Minnesota-Dakota Orthopedic Club and the American College of Chest Physicians will be held one morning for each group. And on Monday afternoon can be heard the Carman Lectureship in Radiology, while Tuesday afternoon will have a special pediatrics lecture by a nationally prominent pediatrician.

Ringworm of the scalp (tinea capitis), blood plasma and obstetric manikin demonstrations will be so arranged as to have one or another of the three each morning and afternoon. Besides these, special scientific exhibits or demonstrations have been requested from 31 agencies, groups or committees including several hospitals and sanatoria, various clinical committees, allied professional groups, veterinarians and pathologists.

Over and beyond this grand array of clinical and scientific information, commercial exhibits of every nature and description will accentuate the necessity for your attendance and participation. The newest drugs, pharmaceuticals, appliances, apparatus, equipment, methods, procedures technics, books, periodicals and literature will be on display in the greatest profusion in one of the largest commercial exhibitions yet seen.

You can use it for what it was planned, the most intensive and well-balanced of refresher courses. Whether specialist or general practitioner, it cannot miss your needs and fancy. So let's all make it the biggest and best medical meeting ever held in Minnesota.



President, Minnesota State Medical Association

Editorial

CARL B. DRAKE, M.D., *Editor*; GEORGE EARL, M.D., HENRY L. ULRICH, M.D., *Associate Editors*

THE USE AND ABUSE OF PARENTERAL FLUIDS

VALUABLE as the administration of parenteral fluid may be, one can err seriously in giving too much fluid containing electrolytes to patients who need only glucose in water or in not giving fluid containing electrolytes to patients who need them.

The normal adult drinks 1500 c.c. or more of liquid daily. In addition he obtains about 1200 c.c. of liquid from his food. The moisture lost through insensible perspiration and expired air amounts to about 1200 c.c. so that the liquid obtained from food balances approximately that lost from the skin and lungs. The 1500 c.c. of liquid drunk during the day is necessary for proper kidney function in the elimination of salts and waste products of nitrogen metabolism. Fever, high environmental temperatures, and exertion even without sweating increase the loss from skin and lungs and consequently increase the fluid requirement.

If, for any reason, a normal amount of fluid cannot be taken by mouth, parenteral fluid is indicated. Following an operation for instance, when a patient is unable to eat or drink, he requires from 3000 to 4000 c.c. of parenteral fluid to prevent dehydration. All this should not be given in the form of physiological saline or lactate-Ringer's solution. Acutely ill patients and particularly postoperative surgical patients tolerate excess sodium chloride very poorly. Pulmonary edema, peripheral edema and oliguria can result from the use of too much saline solution in such patients. The normal daily intake of sodium chloride ranges from 4.0 to 10.0 Gm. so the administration of saline parenterally should be limited to 4.5 Gm. sodium chloride in each twenty-four hours unless there is an abnormal fluid loss by fistula, drainage, et cetera. It should be remembered that physiological saline solution contains 9.0 Gm. of sodium chloride per liter and lactate-Ringer's solution contains 6.0 Gm. of sodium chloride and 2.7 Gm. of sodium lactate per liter. Three liters of saline solution contain

27.0 Gm. of Sodium Chloride and the same volume of Ringer's solution contains 18.0 Gm. of sodium chloride and 8.1 Gm. of sodium lactate. It should be remembered too that plasma, amino acid solutions and blood contain sodium chloride and other sodium salts in appreciable amounts.

If gastric or duodenal suction has been instituted, there is need for additional parenteral fluid and sodium chloride to replace that lost through the suction. Fluids obtained from the stomach and duodenum contains approximately an equivalent of 5.0 Gm. of sodium chloride per liter. Fluids and sodium chloride lost by suction should be replaced. Determination of plasma chloride levels at intervals is essential if suction is continued for many days, for the above replacement rule represents minimal requirements.

There are many conditions which cause dehydration by the excessive loss of both water and electrolytes: copious vomiting from pyloric obstruction, intestinal obstruction or other causes; severe diarrhea; drainage from external biliary, pancreatic, and other fistulas; transudation or exudation of fluid from large denuded or burned areas; profuse sweating; diabetic acidosis with loss of fixed base combined with acetone bodies; and excessive loss of sodium chloride in the urine of patients with Addison's disease. Serious errors can be made by failing to supply adequate sodium chloride (or sodium chloride with sodium lactate or bicarbonate) in the appropriate instances. Each of the above causes of dehydration represents a special problem and cannot be discussed here, but it must be emphasized that these conditions must be recognized and treated properly.

In medical cases it is just as important to preserve electrolyte balance. If the kidney function is impaired to such an extent that the blood urea nitrogen and creatinine are increased, water is needed in larger volume than in normal individuals for the elimination of metabolic products. If the plasma chloride is normal or elevated in the presence of edema, sodium chloride in the diet or saline solution parenterally is contraindicated. Parenteral fluid in the form of glucose

in distilled water may be given. Schemm has shown that in the presence of edema of nephritic or cardiac origin, fluid without salt and an acid ash diet will help reduce edema by their diuretic action. Saline solution will only aggravate the edema present and tend to produce pulmonary edema. Water should not be restricted even in the presence of edema but may be forced if the salt intake is restricted.

EDMUND B. FLINK, M.D.

STUDY OF CHILD HEALTH SERVICES

THE Council of the Minnesota State Medical Association at its recent meeting in Minneapolis approved a plan for conducting a Survey of Child Health Services throughout the state. In order that every physician in the state of Minnesota will be fully informed on the purpose and plan of this study, regular announcements regarding its various phases will be made from time to time through the office of the Minnesota State Medical Association. The action of the Council has been made public but a more detailed explanation for the physicians of the state is in order at this time.

The American Academy of Pediatrics, at the annual meeting in St. Louis in November, 1944, formulated a plan which is being carried out by a special committee under the direction of Dr. John P. Hubbard, who was a member of the Children's Hospital Staff in Boston until he entered the Medical Department of the Army. The organization of this survey has now been completed.

The reason for inaugurating this study arose from the realization that, if all children are to receive the care they need, systematic planning is necessary. It was felt that the responsibility for such planning should rest on the physicians themselves. Physicians know what constitutes good care; physicians for the most part provide this care and they are the ones who should develop and conduct such a program. However, in order to develop a plan, facts regarding the services available must be determined.

One purpose of the study is to stimulate groups and individuals to evaluate the existing facilities and to determine the needs within their own communities. Unless physicians undertake this task, others less qualified will, as has been in-

dicated by proposed legislation now before Congress.

The content of the study falls into four categories:

1. Hospital facilities.

Information on pediatric care will be sought from all hospitals: general, pediatric and maternity; convalescence homes; tuberculosis sanatoriums and so forth.

2. Community health services, public and private.

Information will be sought regarding the extent and quality of child health conferences, school health services, child guidance clinics, immunization programs and public health nursing.

3. Distribution and qualifications of professional personnel and available services.

Information will be requested from pediatricians, general practitioners and specialists who care for children. The availability of physicians and of procedures employed in medical care, such as transfusion, intravenous administration of fluids, artificial respiration, administration of oxygen and laboratory work, will be determined.

4. Pediatric education.

A special committee will study the sixty-six medical schools throughout the country to determine the quantity and quality of pediatric teaching.

When the study has been completed, a report will be prepared which will be available to all who care to use it. It will be a collection of facts which may be used as a basis for sound recommendations for medical care.

Members of the American Academy of Pediatrics are committed to aid in this study of child health services.

Responsibility for the organization and inauguration of the study within each state was delegated to the state chairman of the Academy who, with the help of a full-time executive secretary, will carry it out. The state chairman of the Academy for Minnesota is Dr. Roland Nutting who has recently been named to succeed Dr. R. L. J. Kennedy. Full and active support of the pediatricians in Minnesota has been pledged to the study.

Because it is recognized that physicians are exceptionally busy, plans for obtaining the necessary information have been made as simple as possible. The pediatricians, who will be informed of the details of the plan will be called on to contact individual physicians and groups of physicians throughout the state and explain the purposes and details of the plan.

EDITORIAL

Questionnaires will be used and they will be of several types: those intended for pediatricians, for physicians in private practice, and for hospitals. Local medical societies will be kept informed and local health officers will be asked to take part in the study.

All publicity in connection with the study will be released from the office of the Minnesota State Medical Association. Funds to cover the cost of the study may be obtained from several sources. A request has been sent to the Minnesota State Board of Health asking that funds allocated under Section B, Title 5, of the Social Security Act be made available and it has been requested that the Director of Child Hygiene be instructed to participate in the Study.

Notice has been received from the national office of the survey that the National Foundation for Infantile Paralysis has instructed its regional directors and field representatives to co-operate in this study and to make available funds with which to help defray its cost. The Kellogg Foundation at an earlier date also has made help available.

The desirability of this child health study is quite apparent since the data which will be made available can be used not only for planning by the physicians but also to refute erroneous statements which may be made in support of ill-advised legislation.

It is expected that the actual work of this study will begin in the very near future. This study is of vital concern to the physicians of the state and deserves their full co-operation.

ROGER L. J. KENNEDY
*Chairman, Child Health Committee
Minnesota State Medical Association*

THE STATE MEETING—MAY 20-22, 1946

LAST year war restrictions prevented the holding of our annual State Medical Association meeting, except for the House of Delegates. This year the ninety-third annual meeting promises to be unhampered in every way. Those who have been away in the service will have the opportunity of meeting again former friends whom they have not seen for several years or more. Let us make the meeting a real reunion.

The program is being mailed to members well in advance of the meeting. Every effort has been made by the Program Committee to select sub-

jects of new and general interest for the general sessions. On Monday morning, the Minnesota Academy of Ophthalmology and Otolaryngology will hold a separate session; on Tuesday morning the Minnesota and Dakota Orthopedic Club; and on Wednesday morning the Minnesota Chapter of the American College of Chest Surgeons. A scattering of out-of-state talent will add to the program to be presented by local talent in all the sessions.

Demonstrations on Ringworm of the Scalp by the Committee on Child Health and the State Department of Health; on Blood Substitution by the Committee on First Aid and the Red Cross; and Manikin Demonstrations by Dr. M. E. Davis of Chicago will be held each day, and some twenty round-table discussions which have proven so popular of late will add materially to the value of the meeting.

The Saint Paul Surgical Society is writing all interested to attend a dinner meeting Monday evening at which Dr. George M. Curtis of Columbus, Ohio, will be the guest speaker. The annual banquet Tuesday evening will be especially popular as it will be addressed by Dr. James L. Morrill, president of the University of Minnesota, and Dr. Edwin J. Simons of Swanville, president of our State Medical Association.

Make your hotel reservation early or write one of your Twin City friends you are open for an invitation.

CLINICAL-PATHOLOGICAL CONFERENCE

(Continued from Page 339)

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MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

COUNTY AND DISTRICT OFFICERS DISCUSS CURRENT MEDICAL PROBLEMS IN STATE

Veteran medical care, prepaid medical service, and the blood plasma and cancer programs for the state were discussed at the annual meeting of the officers of the thirty-four county and district medical societies held Saturday, March 2, in Minneapolis.

Attendance at the conference was over 100, which represents a doubling of the total attendance at last year's session.

What the Veterans Administration expects of Minnesota physicians in carrying out its program of providing the best possible care for the returned GI was explained to the group by Mr. Carl D. Hibbard, manager of Minnesota Veterans Administration, and Dr. Einar Andreassen, recently appointed regional medical director in this area.

"We are in complete agreement with General Bradley in his policy of having local doctors treat veterans wherever possible," Mr. Hibbard said. He reported that within the last three months the number of veterans requiring the assistance of the administration has tripled; and, therefore, it is more important than ever that private physicians assume some of the care of these men.

Family Physician Well Qualified

The veteran's family physician is better qualified than a stranger to care for the veteran since in many cases he has known the patient since birth and may have treated him for childhood diseases or injuries. The family doctor knows the patient's economic status, the nature of his work and even what arrangement for treatment would be most convenient for the patient.

The Veterans Administration is calling upon doctors to make physical examinations for establishing ratings or pensions, Mr. Hibbard said. The doctor's statement will be used by the VA

rating board which is composed of a medical specialist, an occupational specialist and a legal specialist. The complete and detailed medical information which the doctor's report will contain is to be used to insure fair and proper rating of cases for pension purposes. The medical member of the board will interpret the medical statements to the other two members; the occupational specialist will determine from the report and the interpretation whether a disability exists and the extent; the legal member will have the say as to whether the law allows pension or compensation for the individual case. The fairness and impartiality of the final judgment in each case, said Mr. Hibbard, will depend upon the completeness of the individual physician's report.

Information should include complete medical history of each disability, disease or injury for which the veteran makes a claim, supported by medical findings, diagnoses and conclusions.

Assure Vets in Rural Areas Proper Care

Dr. Andreassen stressed the importance of another problem of the Veterans Administration, that of the veteran living in a rural area where there may be a skilled physician available, but where there is a lack of equipment and technical aid such as laboratories, x-ray or hospitals. The administration hopes to see a system in effect where the local physicians will make examinations and where possible give necessary treatment, but, hospital and technical facilities lacking, the physician will refer the veteran to the nearest community where he can get proper care.

The Minneapolis Veterans hospital, he said, operating under the new department of medicine and surgery and staffed by men from the University of Minnesota, will be able to handle such cases. An arrangement has been made with the Mayo Clinic to handle certain cases.

It was brought out in the discussions that or-

dinarily outpatient treatment for service-connected disabilities must be authorized in advance of treatment by the Veterans Administration. However, if a veteran is in need of prompt, emergent treatment and eligibility can be determined from the veteran's papers, the physician may give the necessary treatment, provided he requests authority to do so by mail not later than five days after giving the treatments.

Need for Filing Claim Cited

Dr. Andreassen warned that doctors will undoubtedly be visited by veterans who have not established nor filed claims of service connection for their disabilities. When a veteran does not have a letter from the Veterans Administration stating that service connection for his disability is being allowed, the procedure is to question the veteran to determine whether he has the necessary prima facie evidence. A veteran's statement that he needs treatment for a disability which he believes to be service connected will be accepted by the Veterans Administration as an informal claim which is pending adjudication. The medical statement and the veteran's statement should be sent immediately to the Manager, Veterans Administration, Regional Office.

Dr. Richard B. Hullsiek, chairman of the Medical Advisory Committee on Veterans Affairs, outlined the problem facing civilian doctors when situations arise where veterans after having been out of service several weeks or months become ill and go to their local doctor and either on original examination or after repeated examinations it is determined that they need hospitalization or further medical care. The first thing for a doctor to remember in each case, he said, is that the veteran must put in a claim in order that authority can be granted by the Veterans Administration for medical care that will later be authorized and paid for by the Administration.

The committee is now at work on a plan for Minnesota wherein a satisfactory fee schedule and contract satisfactory to the Veterans Administration and the physicians of the state will be developed which will enlist the service of all physicians to render veterans outpatient care.

University's Contribution Described

Dr. John R. Paine of the University of Minnesota hospitals staff discussed the assumption by the University Medical school of the medical care of patients at the Minneapolis Veterans hospital,

a program which has been in effect since November of last year. The two main purposes of the program, that of giving veterans the best medical and surgical advice and treatment available, and of furnishing postgraduate training for a large number of carefully chosen doctors and making specialists of them, were described. The examining boards, Dr. Paine said, have all indicated their willingness to accept training at this hospital as suitable for candidates for certification when the Medical school has acquired the proper staff and has instituted a suitable program.

Measures taken to insure the best of medical care for hospitalized veterans, he said, are already bearing fruit. The most important accomplishment has been the augmentation of the clinical staff of the Veterans hospital. Where previously one doctor had to care for as many as eighty to ninety patients, he now is responsible for no more than twenty to twenty-five. The University program has instituted a department and staff of anesthesia. Up to the present time there has never been trained anesthetists in any of the Veterans hospitals, but now at the Minneapolis hospital veterans undergoing surgery receive the best of modern anesthetic techniques.

Much has been done to alleviate crowding in the hospital by early ambulation following operation and the increasing of the operating room suite from two to six rooms, which is eliminating much pre-operative hospitalization.

"Best Care for the Most at the Least Cost"

Dr. B. J. Branton of Willmar in describing the proposed prepaid medical plan for Minnesota said that what we here in Minnesota want is "the best care for the most people for the least cost."

Minnesotans, he said, are lovers of freedom and democracy and do not want any compulsory type of sickness insurance thrown at them.

The Minnesota State Medical Association at its last House of Delegates meeting elected two men from each of the nine component districts and six delegates-at-large (a total of twenty-four, as a committee to lay groundwork for the establishment of the Minnesota plan.

This committee has studied the plans of many states, finding the one in Michigan to be the best of the non-profit corporations. However, Dr. Branton declared, Minnesota needs "a plan of its own" not a copy of another; it needs a plan which will suit the farmers as well as the businessmen,

the specialists in the cities and the rural practitioners, one which will provide not only obstetrical or surgical care, but one which will provide medical care too.

State Plans Co-ordinated at National Level

Speaking to the officers on the proposed national plan for prepaid medical service, Dr. A. W. Adson of Rochester reviewed the work done by the AMA Council on Medical Service and Public Relations in exploring a number of fields for the purpose of setting up a national program. A series of meetings had been held, he said, to examine various suggestions. Dr. Adson described the setting up of the Associated Medical Care Plans Incorporated, the purpose of which was to seek mutual co-operation between all voluntary prepayment medical plans, to maintain a standard, to develop rights of local committees and to make state plans as uniform as possible.

The Council on Medical Service and Public Relations approved the appointment of a director and the necessary staff to advise him and a proposed yearly expense of \$50,000. There will be set up a department of prepayment medical insurance in connection with the council with a full-time or part-time director. He and his staff will establish new plans, strengthen ineffective plans and establish reciprocity of benefits in the various states.

The objective throughout in establishing this over-all national plan, said Dr. Adson, shall be not to work at the problem from above, but to start at the base and gradually work up. The answer to the nation's medical care problems, he said, shall be answered without getting the government to help us do it.

Doctor Wells Reviews Cancer Program

Establishment of cancer detection centers throughout the state was the ultimate goal of the proposals discussed for the group by Dr. Arthur H. Wells, pathologist at St. Luke's hospital in Duluth and chairman of the state cancer committee.

The centers described by Dr. Wells are to be free to all persons coming in for examination and staffed by physicians donating their services. Located in hospitals approved by the American College of Surgeons and set up with the approval and under the direct supervision of the various county medical societies, they will be financed by the American Cancer Society. They are a project

of the Minnesota State Medical Association and are designed to detect abnormalities which do not produce symptoms sufficient to send the patient to a doctor.

The centers will not diagnose or treat diseases, but where cancer is suspected or indicated, patients will be advised to see their family physician.

At the outset, it is recommended that trial centers be set up in Minneapolis, St. Paul and Duluth; and as soon as it is practical and feasible, centers shall be extended to other communities at the initiation of the county medical societies.

Blood Plasma on Way to Physicians

Physicians in Minnesota will soon receive supplies of dried blood plasma from hospitals in their home communities, Dr. A. J. Chesley, executive secretary of the Minnesota State Board of Health, told the delegates. Donated by the American Red Cross from Army and Navy surpluses, the blood plasma will be supplied through some 193 general hospitals and to four tuberculosis sanatoria throughout the state. It is intended, Dr. Chesley stated, to be used only in cases of extreme emergency where definite need is indicated.

Dr. Paul F. Dwan reviewed for the assembly the medical and surgical conditions that influence a physician's choice of blood substitute. Acute hemorrhage, severe burns, chronic illness, such as cancer, and nutritional anemia were among the conditions that indicate a need for transfusion. Plasma, he said, should be used judiciously, where medically indicated, and where the benefits to be derived overbalance the risks inherent in the intravenous administration of any infusion fluid.

National Officers Speak at Dinner Meeting

After-dinner speakers were two officers in the American Medical Association, Dr. R. L. Sensenich, South Bend, Ind., chairman of the Board of Trustees, and Mr. Thomas A. Hendricks, of Chicago, acting secretary of the Council on Medical Service and Public Relations.

Speaking on the current problems facing medicine today, Dr. Sensenich declared: "A voluntary health insurance program, not a compulsory political program, is the cornerstone around which the budgeting of health costs must be built if the present American system of medicine is to remain unshackled by government bureaucracy."

He stressed the 10-point health program of the AMA and urged that responsibility for getting a fair standard of health should be placed with the individual as far as possible. Federal aid is desirable when needed and if a community is willing to share in the responsibility and the expense.

"Good deeds aren't talked about, bad deeds are," Mr. Hendricks pointed out in his discussion of public relations. Besides his simple definition that public relations is "conduct that should lead to public acceptance," Mr. Hendricks contended that public relations begin at home—that their goodness or badness is dependent on little things like the conduct of the doctor in the patient's home. Bad conduct on the part of as few as one per cent of the individuals in the medical profession or any profession can spoil the whole group effort.

Mr. Hendricks said that an active functioning county medical society can do much to establish good relations. Said he: "The County Society is the best thing American Medicine has." In conclusion, Mr. Hendricks described the responsibility which the County Medical Society today bears, citing the following paraphrase of a statement which Winston Churchill made in a secret report to the House of Commons in the darkest days of the war:

"Testing, trying, adverse, painful times lie ahead of us. We must all strive to do our duty to the utmost of our strength. As the war against regimentation and political medicine rises remorselessly to its climax the medical profession will have the opportunity once again of proving to the world that the firmness of spirit, sense of proportion, steadfastness of purpose which have gained it renown will once again be victorious over bureaucracy. In the final analysis, whatever is to be done must be done through the local societies—the strength, the fight, the fire, the know-how and the 'can do' are in the states and the local medical societies. With your help the job can be done, the job must be done, the job will be done!"

CHILD HEALTH SERVICES SURVEY PLANNED

At its morning session preceding the County Officers meeting, the Council approved a plan for conducting a survey of child health services throughout the state, a plan which is to be carried

out in co-operation with the American Academy of Pediatrics of which Dr. Roger L. J. Kennedy of Rochester is state chairman. The plan, introduced by Dr. Kennedy, chairman of the state committee on child health, was formulated by the academy two years ago with the establishment of a committee on the study of child health services.

The Minnesota State Medical Association will sponsor the survey in the state to gather information from physicians, hospitals, health and welfare agencies and all other groups involved in health activities. Pediatricians of Minnesota have indicated their willingness to carry out assignments necessary to successful completion of the survey. It is planned that an executive secretary, preferably a physician, will be appointed to set up a central office from which all work on the survey in this state will be directed.

Dr. John Hubbard, who was on the Children's hospital staff in Boston before he entered the medical department of the army, has been appointed general national director with headquarters at the Children's hospital in Washington, D. C. A staff of experts is now at work under him formulating the questionnaires and manual that will be used. In order that the over-all picture will show uniformity, these will be identical in the various states. A pilot study in the state of North Carolina has been used as a guide for mapping future surveys. More detailed information on the survey is to be released as plans get under way.

USE OF MYRISTYL-GAMMA-PICOLINIUM CHLORIDE IN SURGERY

(Continued from Page 325)

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Minneapolis Surgical Society

Meeting Held December 6, 1945

The President, Robert F. McGandy, M.D., in the Chair

HERNIA IN SOLDIERS: DESCRIPTION OF A NEW INGUINAL OPERATIVE METHOD

HAMLIN MATTSON, M.D., M.S. (Surg.)
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It is an understatement to say that it is a pleasure to return home following service with the armed forces. During most of my service I worked with the Wake-man Hospital Center and related projects for the care of combat wounded. Established before the Normandy invasion, it grew to a bed capacity of 8,000 and was the largest of its type in the army. Many if not most of the patients came by air from the European and Pacific theaters. Eighty per cent of the beds were surgical. As assistant chief of the surgical service my duties consisted in assuming responsibility for the surgery in five of the eight sections of the surgical service.

Such duties permitted among other things the pursuance of an interest of many years in the problem of hernia. The types of inguinal hernia seen were influenced, of course, by the average age of the patients, the screening of induction examinations and the increased muscular development of the soldier.

Final statistical figures for World War II regarding the incidence of hernia at screening examinations are not available as yet. In 1942, 19,923 medical records were selected as representative samples from various states;¹⁷ 64.6 hernial defects were found for each 1,000 men examined. Of 3,000,000 registrants examined from November, 1940, through September, 1941, 43.8 per cent were rejected at local boards and 9 per cent more at induction centers, making a total of 52.8 per cent. In November, 1943, men with hernia which had not descended into the scrotum were accepted. As of May 1, 1944, 4,049,000 of 13,000,000 registrants had been rejected.¹⁸ Of this number, 229,000 or 5.7 per cent were rejected with hernia as the principal cause. Hernia was given as eighth in frequency as a principal cause of rejection.

Increased development of the internal oblique muscle and greater fascial endowments were noticeable during herniorrhaphies on soldiers as compared with the usual run seen in civilian practice. Any doubting Thomas who thinks the internal oblique sphincter action on the internal ring is more theoretical than real, need but put his finger in the neck of an indirect sac when a bulging muscled soldier is recovered partially from anesthesia to be convinced that the internal oblique really does exert a definite and sometimes very strong sphincter action on the internal ring.

Early in the war major surgery was distributed among various installations in the zone of the interior, but later

only general hospitals could perform major operations except in emergencies. Hernia repairs naturally were put to unusual stresses and strains by muscular individuals in the exigencies of war. There seemed to be many recurrences. It was while working with direct inguinal recurrences which previously had fascia transplants that I became interested in seeking a better principle of surgical treatment.

There are variations seemingly without end but methods currently in use for the repair of direct inguinal hernia are essentially modifications of a technique described fifty-five years ago by Eduard Bassini¹⁹, a then obscure surgeon at Padua in the swamps behind Venice. The inguinal strata were sutured to their inguinal ligament. Bassini rescued hernia surgery of his day from despair.

Despite improvements in technique in fifty-five years, recurrence rates for direct and recurrent inguinal hernia remain high in the United States. In a recent collection of end-result studies covering a period of ten years, recurrence rates for direct inguinal hernia varied from 2.7 to 33.3 per cent with an average of 15 to 20 per cent.²⁰ In 1934, Andrews and Bissell¹ reported a recurrence rate of 27 per cent and advocated abandonment of operation for direct inguinal hernia except for pain. Though final figures are not available, it seemed that recurrence rates in the armed services at least were not below those in civilian life. In 1944, admissions to the navy sick list for hernia numbered 16,386⁷; 1,114 were admitted because of recurrent hernia of which 484 were incurred prior to induction.

If it were possible to cover Hesselbach's triangle from the pubic spine with a layer of thick aponeurosis and anchor it to a solid structure by sewing clean fascia to clean fascia, better results should be possible generally. In the fall of 1943, on soldiers from the California desert training center, I began to turn back a flap of rectus to the superior pubic ligament for a distance of 5 centimeters out on that ligament, anchoring the rectus flap with interrupted silk sutures. The inguinal ligament was ignored. To be certain that an indirect sac was not overlooked, the cremaster envelope was opened in each case. If it is looked for, a projecting tongue of peritoneum can be found nearly always at the internal ring. Whenever necessary the transversalis fascia was sewed with interrupted silk around the actual structures of the cord.¹³

Much surgical and anatomical water has gone over the dam since Bassini's day, and the inguinal structures have been restudied with greater care. Recently the very basis of the Bassini operation has been challenged openly. After a dissection of 300 inguinal regions with the thought of continuity of aponeurosis and fascia in mind,

McVay, in 1939¹⁴, described the inguinal ligament as essentially a guy-rope. "The inguinal ligament," he writes, "is not the site of insertion of either the transversus abdominis or internal oblique muscles, nor is it anchored securely enough to its fascial surroundings to serve as a substitute for this insertion." He states that "pure fascia does not have the strength necessary to repair a muscle-aponeurotic defect such as occurs in direct inguinal hernias." He found that "the lowermost fibers of the internal oblique and transversus abdominis muscles do not attach to the inguinal ligament but insert into the fibrous covering of the pubic pecten, the ligamentum pubicum superius (ligament of Cooper)." According to his findings, the conjoined tendon usually is an artifact of dissection. In 7 per cent of dissections, he found the lower transversus abdominis deficient. This year Brandon⁵, commenting in the British journal, *Lancet*, on the "house Bassini built" states that if a house persists in falling down in spite of having immensely strong walls, it can only mean that no one has examined the foundations with sufficient care.

Superior Pubic Ligament

Sir Astley Cooper described the superior pubic ligament (BNA) in 1804. He is reported to have advised its use in inguinal hernia operations. Anatomists and surgeons have paid little attention to it through the years. The twenty-fourth edition of Gray's Anatomy⁹, published in 1942, gives it just four lines of fine print. It is a strong fibrous band extending lateralward from the base of the lacunar ligament along the pectineal line of the superior pubic ramus, to which it is attached firmly. It is strengthened by the pectineal fascia and by a lateral expansion of the lower attachment of the linea alba called the adminiculum linea alba. Lotheissen¹² reported using it in inguinal and femoral hernia in 1898. He encountered a forty-five-year-old woman who had been operated on twice before by the Bassini method. In May, 1897, he found the inguinal ligament destroyed and resorted to the use of Cooper's ligament. He quoted Narath of Utrecht as having performed the same procedure under similar circumstances. Subsequently, this method has been used in Europe and America. Babcock² sutured the uncut rectus sheath to the dense fibrous covering of the pubic pecten in 1927. Dickson⁶ suggested ignoring the inguinal ligament entirely in 1936. Recently at Henry Ford Hospital in Detroit, practically all inguinal hernia operations have been done by the superior pubic ligament technique.¹¹

In November, 1943, I applied the method used by Harkins. To relieve tension on the suture line I made a linear incision in the rectus sheath as he did. Because of dissatisfaction with the relaxation thus produced and the inadequacy of the transversus abdominis in certain cases, I turned down a flap of rectus and pyramidalis sheath, a method which had been applied to the inguinal ligament.

The Rectus Sheath

Bassini is said to have used the rectus sheath often in closures. In 1892, Wolfier²¹ cut the rectus sheath

and used it in hernia repair. Slajmer (1898) reported on 150 cases using Wolfier's method.¹⁰ His drawing shows an incomplete rectus flap sewed to the middle third of the inguinal ligament. The flap was not cut down to the pubis. Berger⁴ (1902) and Halstead¹⁰ (1903) turned down full flaps of rectus fascia in inguinal hernia repair. In 1941, Estes⁸ reported 2.77 per cent recurrences in 72 cases of direct inguinal hernia in which he used the rectus flap inguinal ligament method.

The so-called conjoined tendon often is a very flimsy structure. McVay found it usually was an artifact of dissection. In 1940, Riehoff¹⁶ dissected 200 cadavers and found difficulty in demonstrating a conjoined tendon.

Description of Method

The incision ordinarily used for hernioplasty is placed a centimeter superiorly and a centimeter medially to the site usually used. The aponeurosis of the external oblique is split over the cord and the cord and cremaster envelope separated from its bed and the superior ramus of the pubis palpated.

The cremaster envelope is opened at the internal ring and the actual structures of the cord isolated. A peritoneal pouch has been looked for and found in each case. The pouch is opened, a finger inserted into the peritoneal cavity, the strength and redundancy of the floor of Hesselbach's triangle evaluated and it is decided then and there as to whether or not it needs re-enforcement. The transversalis fascia is sutured around the actual structures of the cord as a collar and the cremaster envelope closed. The direct sac is disposed of.

The superior pubic ligament is exposed by blunt dissection beginning at the spine of the pubis. The left index finger is used against the femoral vessels as a retractor. After about 6 centimeters of the ligament have been exposed, a boomerang-shaped flap is cut from the anterior sheaths of the rectus and pyramidalis muscles. Fine interrupted silk sutures are placed. Then the upper portion of the rectus sheath flap and available fascia is sutured up to the cord.

Indications

The method described above seems indicated in (1) direct inguinal hernias; (2) indirect inguinal hernias where the fascia of Hesselbach's triangle as shown by the palpating finger within the abdominal cavity is weak or redundant; (3) recurrent inguinal hernias and (4) femoral hernias.

Discussion

The above can be only in the nature of a preliminary report. I have operated upon thirty-five patients in military service since July 1, 1944, employing the above principles. It is my opinion that the operation is sound in principle and gives promise to lower recurrence rates in its field. It is well known that the most vulnerable area for recurrence in direct hernia is the lower angle where in the Bassini operation, two more or less fixed structures are sewed together. This cannot be done without tension as emphasized by Stein and Casten.²⁰ As pointed out by McVay¹⁴, the transversalis in this

angle sometimes is developed poorly. Rectus aponeurosis meets this deficiency and in this respect seems to be an improvement over procedures involving the superior pubic ligament described heretofore.

Postoperatively the examiner gets little or no impulse against the examining finger on cough when the finger is introduced into the internal ring.

The advantage of the procedure in recurrent hernia is that previously worked over scar-laden tissues are avoided and the operation is carried out in a virgin field largely. Recurrence rates should therefore approximate those of the primary operation.

The suture of the transversalis fascia as a collar around the actual structures of the cord gives the advantage which Halstead obtained by removing the cremaster entirely and approaches the insurance against recurrence of removal of the cord and testicle.

The sphincter action of the internal oblique at the internal ring is not disturbed.

Operating on both sides at the same sitting by one of the Bassini or previously performed Cooper's ligament methods, increases definitely the tension at the main suture line. This can be demonstrated readily in the cadaver. Such an objection does not apply to the method just described by me.

Superior pubic ligament procedures safeguard against overlooking an occult femoral hernia, and if a femoral hernia is encountered, the operation above described takes care of it more adequately than any of which I know. It may be said about the general uses of this operation that, in fact, you are damming the waters upstream where the gorge is narrowest with strong aponeurosis rather than below in the broader plain, where the structures part at the seams.

Summary

A method of hernioplasty is described wherein a flap of anterior rectus and pyramidalis sheath is turned down and sutured to the superior pubic ligament. Such a procedure is believed indicated in (1) direct inguinal hernias; (2) indirect inguinal hernias with weak and redundant fascia in Hesselbach's triangle; (3) recurrent direct inguinal hernias operated on previously by other methods; and (4) femoral hernias.

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Discussion

DR. IVAR SIVERTSEN: It has been my pleasure to have the privilege of seeing Doctor Mattson do this work. In fact, I have had him take care of a couple of cases of inguinal hernia as well as one case of femoral hernia by this method.

I think the principle Doctor Mattson has in mind is excellent and his results should be perfect. There is one thing that I feel is necessary in this procedure and that is that the surgeon must know his anatomy. He must recognize the large vessels present and when he applies his sutures he must be sure that he does not injure the femoral vessel, and in this way produce a thrombosis.

The drawing of the flap down to the pectineal line where the ligament is attached, and this part of the rectus muscle brought into position certainly gives excellent support to the deeper structures.

The three cases which were done by Doctor Mattson for me have had excellent results. No impulse is noted when the finger is placed in the external ring.

I congratulate Doctor Mattson on this fine piece of work, and thank him for bringing this matter to the attention of the society.

DR. KENNETH BULKLEY: Doctor Mattson has presented us with a most excellent paper on the subject of hernias, with particular reference to the adequate closure of direct inguinal hernias. Satisfactory permanent closure of these direct hernias is not, as you all know, always easy. We have, all of us, too often in the past seen such hernias, which we closed merely by suturing the edge of the rectus sheath to Poupart's ligament, recur. With this procedure the tension is too great. Doctor Mattson has presented a method of closure by means of turning back a trap door from the anterior rectus sheath, this procedure relieving tension.

There is a further suggestion or two which I would like to make. In the third slide, which he showed tonight, you will note that he has made his trap door

in a semi-circular manner. If this flap is made in a rectangular shape, carrying the far side of the rectus flap to the midline, as advocated many years ago by the late Dr. Joseph A. Blake, it will be found that the tension is still less, and that a broader edge is thus obtained for suture to Poupart's ligament. Furthermore, when this suture is completed, and the so-called conjoined tendon and the aponeurosis of the external oblique also sutured beneath the cord, leaving the cord subcutaneous, a firmer and more solid closure will be obtained. I feel this closure is more solid than that obtained by the Gallie procedure. Patients occasionally complain of discomfort in the cord following such subcutaneous transplantation, but such is always only temporary. Incidentally, I might add that I prefer sharp rather than blunt gauze dissection in these procedures.

DR. CLARENCE DENNIS: I would like to ask one question. There has been some mention by various members of the Society recently of dissecting all the structures of the cord except the vas and the vessels. I am curious to know if most of you gentlemen employ this technique or not. It does seem that it should lower the recurrence rate, although there is probably an increased reason for atrophy of the testicle. In regard to this very excellent paper by Doctor Mattson, in the past two years, we have been teaching our students at the University the McVay-Harkins procedure. It seems to us that this is the most adequate of all the hernioplasty procedures which have been devised. This procedure suggested by Doctor Mattson, however, seems to be workable in conjunction with the McVay-Harkins.

After listening to this paper, I for one plan to try Doctor Mattson's procedure simply to see how it works. This has been a most illuminating paper.

DR. MATTSON: The question was asked as to whether the transversalis could be sutured as a cone cuff pointing intra-abdominally about the actual structures of the cord. I should think that would be difficult, but perhaps possible. I have not tried it. The transversalis fascia is a thin layer and seems to just come together around the actual structures of the cord, within the cremaster envelope.

In Babcock's operation the edge of the rectus sheath is sutured to the lower portion of Cooper's ligament. In the operation which I have described, the turned-back flap of rectus sheath is sutured out almost 5 centimeters from the spine of the pubis.

I appreciate Doctor Bulkley's remarks on sharp dissection. I was brought up on sharp dissection but believe there are a number of instances in surgery when blunt dissection with gauze is called for. One of these, in my opinion, is the exposure of the superior pubic ligament where the areolar tissue can be wiped away and injury to vessels guarded against. Most of the exposure must be by blunt dissection. Gauze dissection is the method used quite generally in exposing Cooper's ligament in the country at large, according to the literature.

The anterior rectus sheath is exposed and taken medially as far as the attachment of the external oblique will permit. Hence, in the procedure I have described, as wide a flap as possible is taken consistent with leaving the external oblique intact.

May I say a word about early rising. The rectus sheath, superior pubic ligament procedure using interrupted silk seems to lend itself well to early rising. Before early rising was interdicted by the surgeon general, I got some of those patients up on the third and fourth day.

As Doctor Sivertsen has indicated, injury to the femoral and deep epigastric vessels must be guarded against. The index finger serves as a retractor and guards the femoral vessels, and I have found it safest to isolate the epigastric vessels much as a nerve is isolated to keep it out of harm's way.

ACUTE ACROMIO-CLAVICULAR JOINT DISLOCATION

Internal Fixation of the Clavicle and Coracoid Process of the Scapula with a Vitallium Screw

ROLLA STEWART, M.D.
Minneapolis, Minnesota

This condition, as the name implies, is a dislocation of the outer end of the clavicle from the acromion of the scapula.

Function of the Acromio-Clavicular Joint

When the shoulder is projected backward, the acromion slides very little because the capsule and the acromio-clavicular ligament are immediately placed under tension, and the joint has a tendency to open. The clavicle follows to a certain extent this backward movement, but is stopped by the tension of the trapezoid ligament. Exactly the opposite occurs when the shoulder is forced forward. As the acromion slides, the acromio-clavicular joint has a tendency to close and the conoid ligament under tension stops the forward movement of the clavicle. When the shoulder is forced upward with the arm in full extension, the conoid ligament is the first to resist.

Anatomy

The integrity of the acromio-clavicular joint is maintained principally by the two powerful coraco-clavicular ligaments, the conoid and trapezoid, and to a lesser extent by the acromio-clavicular ligament. The acromio-clavicular joint is the only union between the scapula and the clavicle and is a very important connecting link between the trunk and the upper extremity. This joint has an intra-articular meniscus and a capsule that is reinforced on its superior aspect by the acromio-clavicular ligament. The fact that its main elements of fixation are quite far away from their articular surfaces, gives it a peculiar feature.

Classification

Acromio-clavicular joint dislocations may be classified into two types: (1) incomplete; (2) complete. In a review of the literature some authors, in using such terms as luxation or subluxation of the acromio-clavicular joint, have not made it clear as to whether they were treating a complete or incomplete separation at the acromio-clavicular joint. This should be made clear because the satisfactory conservative treatment for an incomplete dislocation will not cure a complete dislocation.

Clinical Anatomy

As a means for heavy weight traction and pushing, the shoulder is admirably suited to its task, since it is well supported by strong muscles and allows movement in practically any direction. However, the stress produced by a sudden blow directed against the tip of the shoulder, or a fall on its outer end, will unduly tax the acromio-clavicular joint. Not infrequently there follows a varying degree of separation at the joint with

stretching or tearing of the capsular and associated ligaments. Blows to the outer end of the acromion process are transmitted to the well-cushioned scapula directing it downward and inward. Because of the position of the first rib at the clavicular attachment to the sternum, the outer end of the clavicle is able to follow this downward and inward movement only a fixed distance. When the limit of movement is reached, either the clavicle fractures or one of its two ligaments must yield, providing the force exceeds the strength of the weakest link in the structure.

If only the acromio-clavicular ligament is torn, there will be little or no separation at the joint. Cases of this type are always cured by taping or strapping for a period of eight to ten days.

If the force producing the injury is great enough, the coraco-clavicular ligaments will be torn as well, resulting in wide or complete acromio-clavicular separation. In such cases, no amount of strapping or taping will cure the dislocation.

Complete Separation

Symptoms.—The degree of disability in complete acromio-clavicular joint dislocation should not be underestimated. The patient complains of instability of the shoulder joint and there is constant nagging pain. There is difficulty in abducting the arm beyond 90 degrees. The reason for the disability is explained by the fact that abduction to 90 degrees occurs in the glenoid fossa of the scapula. Abduction beyond 90 degrees brings into play the acromio-clavicular joint. With dislocation of this joint, the pain and difficulty in abducting the arm beyond 90 degrees can be readily understood.

Diagnosis.—Although a suggestive history and typical physical findings will establish the diagnosis in most cases, it is always advisable to examine the area by roentgen ray. A large film should be used so as to include both clavicles on the same film. In this manner, there is set up a normal study of the clavicle of the individual to be examined. The patient should be in a standing position with both arms hanging free and unsupported. It is well to keep in mind that most acromio-clavicular joint separations fall back into normal position when the patient is placed in the horizontal position and may give an erroneous x-ray study. This can be avoided if a pull is exerted on the arms at the time the x-ray is taken on patients who are bedridden.

Principles of Treatment.—Since good results are obtained by conservative methods in partial or incomplete separations, further discussion will be directed toward the acute complete acromio-clavicular joint dislocation. Regardless of the degree of dislocation, a reduction can usually be effected in fresh cases of elevating the shoulder upward and forcing the outer end of the clavicle downward, thus opposing the joint surfaces. Uninterrupted maintenance in this position for a period of several weeks will allow the ligaments to heal. Since the involved ligaments, like fibrous tissue elsewhere in the body, will heal if held in apposition, it is evident that the value of any treatment, whether conservative or

surgical, lies in maintaining rather than obtaining reduction.

Various dressings have been devised to hold the shoulder and clavicle in the corrected position. The majority of these are based on the principle of support of the arm of the injured shoulder by means of adhesive, plaster, cloth, or a metal brace, so placed that the pull of gravity on the arm is counteracted by the compressing support of the dressing. Although theoretically sound and effective when secure, dressings of this type soon loosen and slip with respirations and body movements, thus allowing a return of the dislocation. It is this ineffectiveness which has resulted in the widespread abandonment of conservative treatment.

The first attempt at a surgical repair of acromio-clavicular dislocation was made in 1861 by Cooper. He wired the outer end of the clavicle to the acromion. Paci, in 1899, resected the ends of the dislocated bones and arthrodosed them. Budinger, in 1900, fastened the bones together with screws. Tuffier, in 1914, used silk; and Delbet, in 1916, fastened the bones with nails. Later he employed a bone graft. Cadenat, in 1917, attempted an anatomical repair of all the torn ligaments with silk; while Bunnell, in 1928, comprehensively described the operation used today employing fascia lata. Although Bunnell is considered the pioneer in the fascial repair of acromio-clavicular dislocation, credit must be given to Henry who performed this operation as early as 1924. Watkins, in 1925, reported his work. In place of fascia, he repaired the coraco-clavicular ligament by means of a silk ligature passed around the clavicle and the coracoid process of the scapula. However, his operation was not only an extensive one, but in the hands of many surgeons failed to give satisfactory results. Two years previous, Hart reported his method of applying a plaster-of-Paris shoulder spica cast with the arm abducted at a 45-degree angle. After four weeks he removed the top shell of the cast for the purpose of allowing motion. He figured six to eight weeks as the healing period.

Within the last few years there has been a growing tendency to abandon the radical surgical repair of the coraco-clavicular ligament in favor of simpler procedures. In 1940, Murray reported his method of passing one or two Kirschner wires through the acromion process across the acromio-clavicular joint into the outer third of the clavicle. Although he reports five cases, all successful, some of the photographs in his article showing the wire in place, also show that the dislocation is not completely reduced. In most of his cases, he eventually removed the wires. Since they pass through some of the deltoid muscle fibers they cause pain on abduction at the shoulder joint. Phemister, two years later, reported his method of passing two fairly heavy threaded steel wires through the acromion process into the distal third of the clavicle. He kept the arm in a Velpau bandage for one month and after two months removed the wires and allowed free use of the arm. Although it is a simple procedure to pass one or two wires across the acromion process of the scapula into the distal third of the clavicle, this is the only surgical procedure that has developed a serious complication.

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SEARLE RESEARCH IN THE SERVICE OF MEDICINE

(Continued from Page 358)

In 1942 Mazet reported two cases where the wires had migrated into the pleural cavity.

In 1941 Bosworth reported four cases wherein he ran a vitallium screw through the outer end of the clavicle into the coracoid process of the scapula. I used this technique in nine patients operated upon in the Minneapolis General Hospital in 1942 to 1944.

Technique of the Operation

The patient is placed on the operating table with the back elevated about 35 degrees. After the skin is properly prepared and sterile drapes applied, the remaining portion of the operation is performed under local anesthesia. A three-inch skin incision is made over the tip of the shoulder. The incision begins two inches from the distal end and near the posterior border of the clavicle, then is curved to run anteriorly one inch further over the acromio-clavicular joint. The distal end of the clavicle and the acromio-clavicular joint are exposed by splitting the deltoid muscle fibers that run parallel over the lateral tip of the clavicle. At this stage of the operation, local anesthetic is infiltrated into the region of the acromio-clavicular joint so as to abolish pain when reduction of the dislocation is attempted. Reduction of the dislocation is a simple procedure. The distal end of the clavicle is forced downward while at the same time the shoulder is elevated upward. If the acromio-clavicular joint is sufficiently exposed surgically, one can be certain of a complete reduction. Occasionally, the articular surface of the acromion lies anteriorly or posteriorly to the distal end of the clavicle after the downward separation has been reduced. This can be corrected under vision merely by forcing the acromion backward if there is an anterior dislocation or forward if there is a posterior dislocation. With the reduction of the dislocation maintained, a hole is drilled through the clavicle. The drill hole should be slightly larger than the diameter of the screw and should be placed 1 to 1.5 inches from the distal end of the clavicle. The proper site can be determined as follows: A long needle attached to a syringe of 1 per cent novocain solution is inserted near the anterior surface of the clavicle in line with the tip of the coracoid process. The needle is directed downward and obliquely posteriorly. The medial border of the coracoid can be palpated with the needle and the drill hole placed 0.25 of an inch lateral to the needle. If novocain solution is injected with the progress of the needle, the procedure is painless. After the hole is drilled through the clavicle, 1 per cent novocain solution is injected through the drill hole around the coracoid process. Entering the drill hole in the clavicle, a small drill hole is then made into the outer cortex of the coracoid process. A small washer is placed over the drill hole in the clavicle and a partially threaded vitallium screw 1.5 to 1.75 inch in length is inserted through the clavicle into the base of the coracoid process. The screw should be firmly tightened since there is no danger of overcorrection. The incision is closed with non-absorbable skin sutures or metal clips, and protected with a small sterile dressing. The patient is advised to refrain from abducting the arm beyond

90 degrees and not to use the arm for lifting or pulling while the screw is in place. The screw should be removed in six to eight weeks.

I have been questioned regarding the danger of the screw injuring the axillary artery or vein when inserted into this particular site in the body. Bosworth answered this question. He made a frontal section through a frozen cadaver and found that the axillary artery and vein lie well anterior and out of danger from injury by the screw. If too long a screw is used, the point of the screw merely imbeds itself in the subscapularis muscle and apparently causes no difficulty.

Conclusions

1. Nine patients with acute complete acromio-clavicular joint dislocation have been operated upon showing that it is possible to insert a screw through the distal end of the clavicle into the coracoid process of the scapula which will maintain continuous reduction of the dislocation.
2. It is essential that the patient refrain from heavy weight traction on the arm and refrain from abducting the shoulder beyond a 90-degree angle; otherwise the screw will tear out or break.
3. After a period of six to eight weeks the screw should be removed and the patient then is allowed free use of the arm and shoulder.

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(Continued on Page 372)

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April		
3—11:00	KUOM	You May Have to Know First Aid
4—5:15	WCCO	Cancer Research
6—11:30	KUOM-KROC-KFAM	Medicine in the News
10—11:00	KUOM	The Accident Toll Can Be Reduced
11—5:15	WCCO	Cancer Education
13—11:30	KUOM-KROC-KFAM	Medicine in the News
17—11:00	KUOM	You Are Not Even Safe in Your Own Home
18—5:15	WCCO	Cancer Service
20—11:30	KUOM-KROC-KFAM	Medicine in the News
24—11:00	KUOM	School and Work Also Present Dangers
25—5:15	WCCO	Oral Cancer
27—11:30	KUOM	Medicine in the News
30—5:15	WCCO	Your Community Hospital

U. S. PUBLIC HEALTH SERVICE

Examinations for appointments of medical officers in the Regular Corps of the United States Public Health Service will be held at various convenient localities throughout the country. Examinations are for appointments to fill vacancies of Assistant Surgeon (First Lieutenant) and Senior Assistant Surgeon (Captain).

Regular Corps appointments are permanent. They provide qualified doctors with opportunities for a career in one or more of a number of fields including research, general hospitals, special hospitals, foreign duty, and public health programs.

Entrance pay for Assistant Surgeon with dependents is \$3,411 a year, and for Senior Assistant Surgeon with dependents is \$3,991 a year. Promotions are at regular intervals up to and including the grade of Medical Director which corresponds to full Colonel at \$7,951 a year. Retirement pay at sixty-four is \$4,500 a year. Full medical care including disability retirement at three-fourths pay is provided. All expenses of official travel are paid by the Government. Thirty days' annual leave with pay is provided.

Applicants for the grade of Assistant Surgeon must be citizens of the United States, must present diploma of graduation from recognized medical school, must have had or be in the process of completing the seventh year of college or professional training or experience since high school graduation (two years premedical, four years of medicine, one year internship), and must have a physical examination at the place of oral examination by medical officers of the Service. Applicants for the grade of Senior Assistant Surgeon must meet the above

requirements and must have had four additional years of postgraduate training or experience.

Examinations will be oral and written. The written examination will be held on May 14, 15 and 16 at places convenient to the candidate and the Service. National Board grades may be used for the Assistant Surgeon examination. An oral examination will be held at 9 a.m. at the Office of Indian Affairs, 218 Federal Office Bldg., Minneapolis, Minn., April 29, 1946.

Application forms may be obtained by writing to the Surgeon General, U. S. Public Health Service, Washington 25, D. C.

ILLINOIS OTOLARYNGOLOGY REFRESHER COURSE

A one-week didactic and clinical refresher course in Otolaryngology has been arranged for specialists in the field, from May 13 to 18, 1946, inclusive. Applications for registration should include school of graduation, training and experience. Check for tuition (\$50.00) should accompany the application.

In addition, a special course in Broncho-Esophagology will be given from June 3 to 15, 1946, inclusive. It will consist of lectures, animal and cadaver demonstrations, diagnostic and surgical clinics.

The course will be under the direction of Dr. Paul H. Holinger and Dr. Albert H. Andrews, Jr.

Tuition for this course is \$100.00. Check should accompany application. Class limited to twelve physicians.

Further information may be obtained by writing to the Department of Otolaryngology, University of Illinois College of Medicine, 1853 West Polk Street, Chicago, Illinois.

ATTENTION WOMEN DOCTORS!

On Monday, May 20, a 12:15 luncheon for women doctors attending the annual meeting of the Minnesota State Medical Association will be served in a private room at the YWCA situated across the street from the Auditorium. The price is \$1.00.

Dinner will be served Monday evening at the Women's City Club, 305 St. Peter. Tickets are \$1.50.

Please make reservations early through Dr. Nellie N. Barsness, 540 Lowry Medical Arts Building, Saint Paul 2, Minnesota.

E. STARR JUDD LECTURE

The thirteenth E. Starr Judd lecture will be given by Dr. Samuel C. Harvey, Wm. H. Carmalt Professor of Surgery at Yale University, Monday evening, April 15, 1946 at 8:15 in the Medical Science Amphitheatre. Subject is "The Healing of the Wound."

The late E. Starr Judd, an alumnus of the Medical School of the University of Minnesota, established this annual lectureship in Surgery a few years before his death.

(Continued on Page 366)

THE MODERN WAY TO SUPPLY WARM, MOIST AIR

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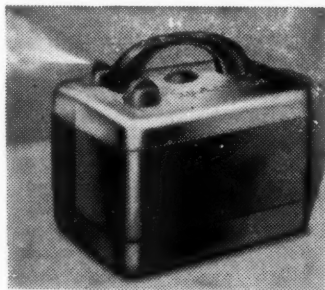
THE VAPOR IS COOLED

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MINNEAPOLIS 2, MINN.

REPORTS AND ANNOUNCEMENTS

(Continued from Page 364)

WASECA COUNTY SOCIETY

Dr. and Mrs. Homer M. McIntire entertained members of the Waseca County Medical Society and their wives at dinner at their home in Waseca on the occasion of the society's annual meeting. After dinner both the society and the auxiliary held their business meetings and elected the following officers: Dr. George H. Olds, of New Richland, was made president of the Medical Society and Dr. Siegfried Oeljen, secretary-treasurer. The auxiliary named Mrs. McIntire president, and Mrs. Olds as secretary-treasurer. Resolutions were passed asking adjustment of nurses' salaries to a fair comparison with those in similar institutions in the locality, and urging the hospital board to increase hospital capacity.

WASHINGTON COUNTY

The members of the Washington County Medical Society were addressed at their regular monthly meeting March 12, 1946, by Dr. Karl H. Pfuetze, Medical Director and Superintendent of the Mineral Springs Sanatorium. His subject was "Tuberculosis," and chest x-rays were presented. Dr. Pfuetze also spoke on the uses and effects of the newer drugs on this disease as well as the effect of the newest drugs, not yet available for the general practitioner.

SPRING CLINIC—CRIPPLED CHILDREN SERVICES

The Division of Social Welfare, Medical Services Unit, announces the Spring Clinic Schedule for Crippled Children Services as follows:

Location	Date	Counties	Building
St. Cloud	April 6	Stearns Benton Sherburne	Technical High School
Austin	April 13	Mower Freeborn Steele Dodge	Sumner School
Thief River Falls	April 27	Pennington Marshall Red Lake Roseau Kittson	High School
Wadena	May 4	Wadena Todd Hubbard	High School
Moose Lake	May 11	Aitkin Carlton Pine Mille Lacs Kanabec Lake Cook	High School
Worthington	May 18	Nobles Jackson Murray Rock Pipestone Cottonwood	Grade School
Grand Rapids	May 25	Itasca Koochiching Cass	Senior High School
Morris	June 1	Stevens Pope Douglas Grant Traverse Bigstone Swift	High School
Detroit Lakes	June 8	Becker Clay Mahnomon	High School

Registration Hours: 8:00 a.m. to 2:00 p.m.

NURSES' ASSOCIATION ANNOUNCES COUNSELING AND PLACEMENT SERVICE

The Minnesota Nurses' Association announces the establishment of a Professional Counseling and Placement Service with offices at 2642 University Avenue, Saint Paul 4, Minnesota. The purpose of this service, for which there is no fee to either employer or employee, is three-fold: to help place nurses and auxiliary workers in the geographic area and in the nursing service where there is the greatest need; to help nurses, auxiliary workers, and prospective nurses make the best adjustment to the profession by helping them solve their educational, vocational and personal problems; to provide a place for employers of nurses to report their nursing needs and to get help in filling the vacancies in their nursing staffs.

DINGELL-DANGELL-DINGELL

Well, here it is, the bill of bills,
The Wagner-Murray-Dingell
'Tis said 'twill help cure all your ills;
(Such talk is just a jingle.)

These are the facts that you should know
No matter what your station:
The Surgeon General plans to rule
The health of all the nation.

Sixteen he picks to counsel him
From lists of every kind.
They'll counsel him, but in the end
He'll make up his own mind.

The Council makes reports, that's all.
For this they get good pay.
An awful waste of tax funds, this,
At twenty-five a day.

Your tax for this is four per cent;
Employers pay the same.
And if you're working for yourself,
Your tax is more!—Some game!

Three billion bucks a year that makes
That for the Surgeon General's slated.
If doctors don't do what he says
They're excommunicated!

You can't select a doctor or
A dentist or a nurse,
Unless the Surgeon General
Has picked them for you first.

Why change to socialism now?
As this bill would, no doubt.
Is this America or not?
It's time that we found out.

—By SUE DICKEY HOUGH

Former member, Minnesota State Legislature

The first wealth is health. Sickness is poor-spirited, and cannot serve anyone; it must husband its resources to live. But health answers its own ends, and has to spare; runs over, and inundates the neighborhoods and crooks of other men's necessities.—RALPH WALDO EMERSON.

YOU CAN'T OVERRATE THE VALUE OF CONTROL



Everyone can see the need for control measures against obvious dangers. But dramatic and constant campaigning is necessary to win public support in the fight against the unseen menace

of cancer. Interest must be awakened and education conducted to enlist the public co-operation requisite to success. This challenging work is the responsibility of the Field Army of the American Cancer Society.

To give appropriate significance to these efforts and to focus nation-wide

attention on this vital problem, Congress has designated April, "Cancer Control Month." And again this Spring, as in each drive spearheading the next year's activities, the Field Army's straightforward appeal to all Americans is: "GIVE, to Conquer Cancer."

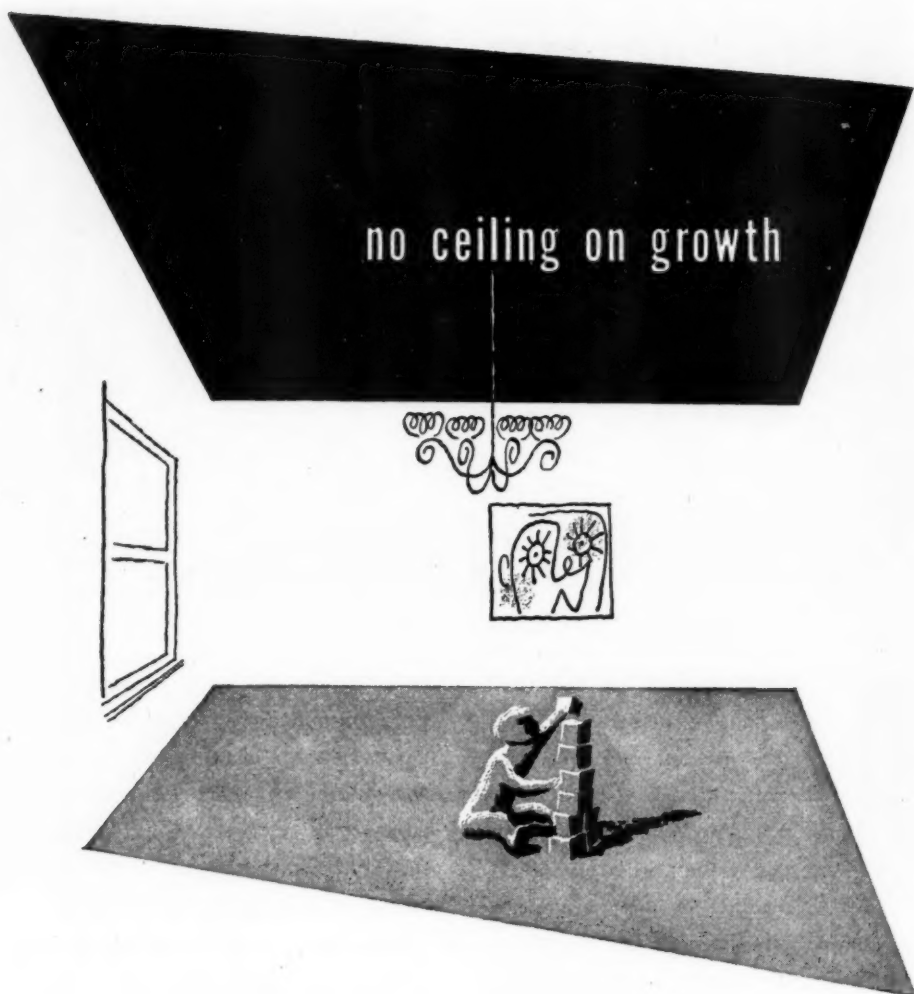
Once more, over 10,000 Rexall Drug Stores across the country unite in behalf of this cause. Urging Americans to heed the Society's plea, these stores contribute facilities for distribution of literature cautioning "Consult your doctor" at the first moment of cancer's "danger signals."

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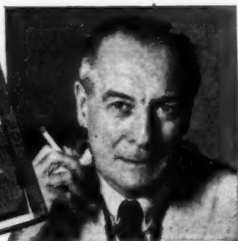
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*—and his life expectancy is
brighter, and longer by 15 years
—thanks to medicine's
"men in white"*

● Cold figures . . . with a warm, wonderful significance. Yes, the figures on increased life expectancy tell as much as a five-foot shelf of volumes on the amazing strides modern medical science has made in protecting and prolonging human life.

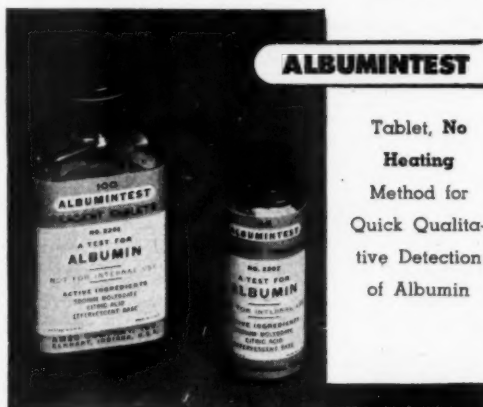


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Method for
Detection of
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Saint Paul, Minnesota

MRS. JOHN K. BUTLER, *Editor*
Carlton, Minnesota

Blue Earth County

Dr. Haddow M. Keith, Section on Pediatrics of the Mayo Clinic, addressed the Blue Earth and Nicollet-Le Sueur County Auxiliaries on February 18 at the Lincoln School auditorium. His subject was "Mental Hygiene," with reference to child health. The meeting was open to the public.

Two members of the auxiliary, Mrs. A. F. Kemp of Mankato, Chairman of the Society for the Control of Cancer, and Mrs. J. C. Vezina of Mapleton attended the three-day Cancer School at the University of Minnesota.

Goodhue County

Mrs. F. R. Hedine and Mrs. R. V. Sherman, both of Red Wing, are on the local committee of the Minnesota Association for Crippled Children and Adults. All of the members of Goodhue County Auxiliary are participating in the annual cancer control drive. The Auxiliary is making plans for an April luncheon to welcome three new members: Mrs. Grant Hartvangel, who has returned to Red Wing with Dr. Hartvangel, recently discharged from the service; Mrs. James Weir of Goodhue, and Mrs. Ralph Larson of Cannon Falls.

Kandiyohi-Swift-Meeker Counties

Mrs. Hans Johnson of Kerkoven was hostess to the Auxiliary of which she is president at Willmar, Minnesota, on January 13.

St. Louis County

Mrs. L. E. Schneider of Duluth, a member of the Auxiliary, gave an enlightening and stimulating review of *Where People Take Their Troubles* by Lee Steiner at the monthly luncheon meeting of the Auxiliary in the Holland Hotel, Tally Ho room, on February 12.

Mrs. G. Arvid Hedberg, president of the Auxiliary, gave a résumé of Dr. Weaver's talk at the State Board meeting.

Mrs. M. A. Nickolson, chairman of the Philanthropic Committee, reported the gift of a card table and four chairs to the Nopeming Sanatorium, one room of which has been a project of the Auxiliary.

Mrs. Robert S. Forbes has been honored for the excellent work she has done with the Red Cross.

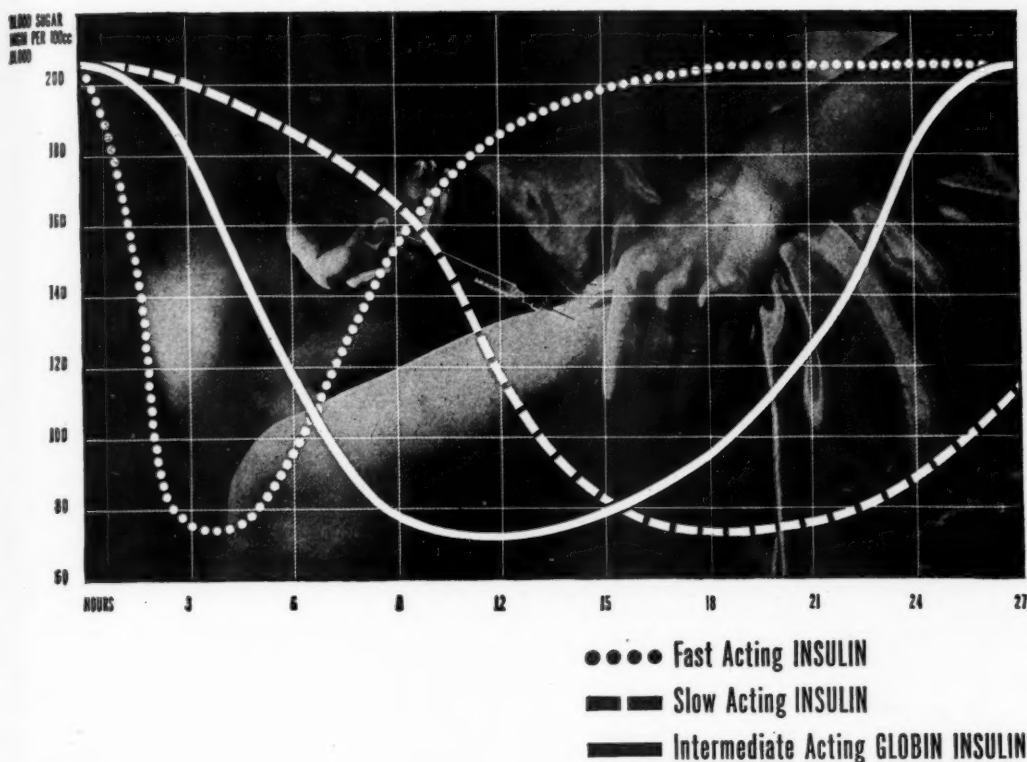
These days each meeting carries with it the excitement of welcoming back those members who have been away so long while their husbands were in the service.

Stearns-Benton Counties

Mrs. R. N. Jones, St. Cloud, was hostess to her Auxiliary on February 12. She gave a report of the State Board meeting held at the Radisson Hotel, January 26. Mrs. J. C. Buscher, representing the Auxiliary, attended the School for Cancer Control at the Continuation Center.

(Continued on Page 372)

MINNESOTA MEDICINE



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THE PHYSICIAN now has a new intermediate-acting type of insulin with which to treat his diabetic patients—'Wellcome' Globin Insulin with Zinc. Originally there was only quick-acting, short-lived insulin. Then came a slow-acting, long-lived form. And now with Globin Insulin he has a moderately rapid-acting agent which persists for sixteen hours or more, enough to cover the period of maximum carbohydrate intake. This activity is sufficiently diminished by night to minimize nocturnal reactions. Physicians will do well to consider the advantages of this new third insulin for their diabetic patients.

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STEARNS-BENTON COUNTIES

(Continued from Page 370)

Dr. and Mrs. J. B. Gaida of St. Cloud announce the birth of a son, Joseph Aubin, at St. Cloud Hospital. Mrs. Gaida is president of the Auxiliary.

Upper Mississippi

The Brainerd doctors and their wives entertained the Upper Mississippi Auxiliary and Medical Society at The Brainerd on February 9.

Washington County

Mrs. R. J. Josewski of Oak Park, Stillwater, was hostess for the Auxiliary on February 12. Nine members were present.

MINNEAPOLIS SURGICAL SOCIETY

(Continued from Page 360)

Discussion

DR. EARL HENRIKSON: I would like to ask one question. You mentioned one screw that broke. Have you had any others break? These screws are not very strong. There is a lot of tension on them in muscular people. I have seen two that broke and I wonder if you know about what per cent do break.

DR. KENNETH JENSEN: I would like to ask, have you had any recurrences of the acromio-clavicular dislocations after the screw was removed in six to eight weeks?

DR. ROLLA STEWART: Regarding Doctor Henrikson's question: I do not know what percentage of the patients broke the screw. I tried to get all the patients back for follow-up x-rays but could locate only a few. I allowed these patients free use of the arm following surgery and discovered it was abducting the arm beyond 90° that broke the screw. Toward the latter part of this work, I advised the patients to refrain from abducting the arm beyond a 90° angle and to refrain from heavy lifting. The arm should be kept in a sling for about six to eight weeks and then the screw should be removed and free use of the arm allowed. Bosworth devised a larger screw, but this requires a drill hole through the clavicle about 1/4 inch in diameter. Any screw similar to vitallium is large enough to hold, providing the patient uses the above precautions.

Regarding Doctor Jensen's question: I have not been able to follow that.

ERNEST R. ANDERSON, M.D.
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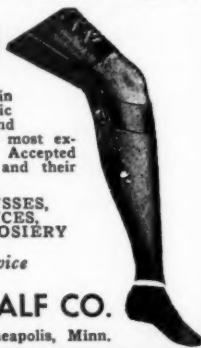
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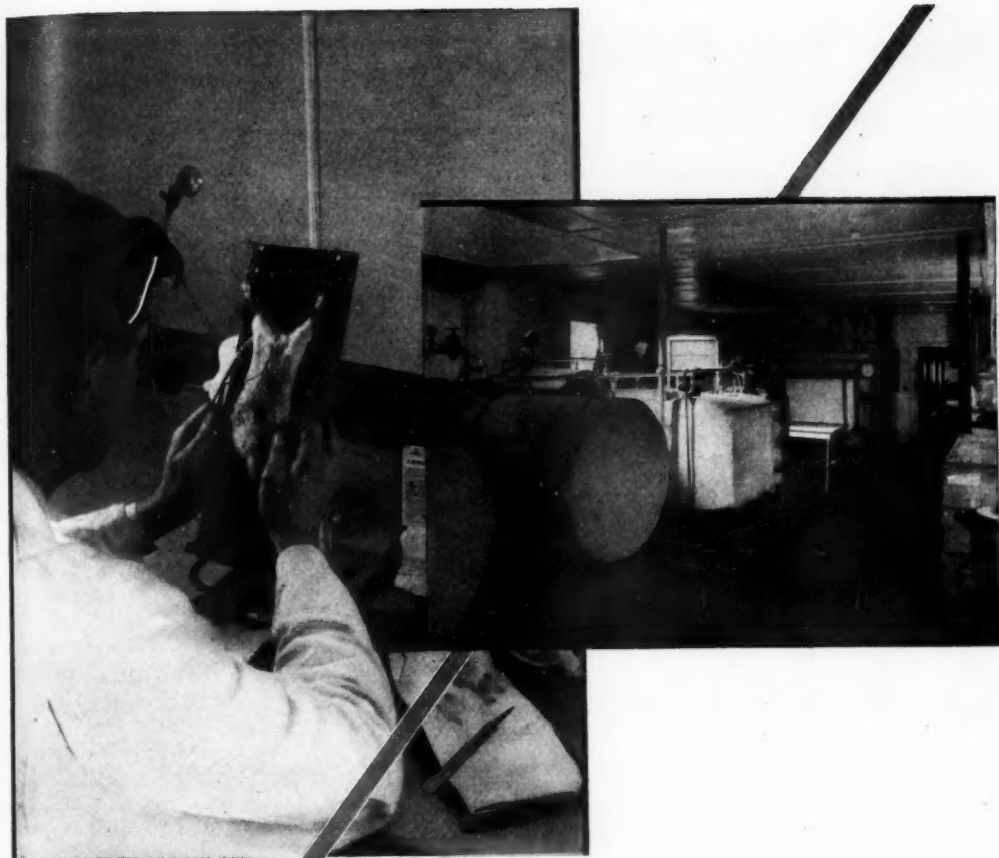
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In Memoriam

HERBERT BURR BAILEY

Dr. Herbert B. Bailey of Fairmont died on February 11, 1946, of coronary thrombosis.

He was born February 2, 1883, at Jackson, Minnesota. His grandfather, Major Hiram S. Bailey, was for a time during the Civil War the commanding officer at Fort Fairmont.

Dr. Bailey received his M.D. degree from the University of Minnesota in 1913, and served an internship in the Minneapolis General Hospital in 1913-14. In 1915 he located at Ceylon, Minnesota, where he had an extensive practice before moving to Fairmont in 1934. In 1937 he established his own private hospital, conducting it until war shortages forced its discontinuance.

He was a member of the Blue Earth Valley Medical Society, the Minnesota State and American Medical Associations. He was a member of the Methodist Church and an ardent Mason. He was fond of hunting, fishing and travel and was active in civic affairs.

In 1913 Dr. Bailey married Sena G. Husby, who survives. A son, Dr. Robert B. Bailey, recently returned from service in the Army. His daughter, Helen Jane (Mrs. John M. Sunderson), also survives.

RICHARD W. CRAGG

Dr. Richard W. Cragg, who was with the Mayo Foundation from 1932 until July 1, 1942, when he entered active service in the Navy, died of coronary occlusion February 18, 1946, at his home at Vallejo, California.

Born December 14, 1905, at Cincinnati, Dr. Cragg received the degree of B.S. in 1926 and of M.D. in 1931 from the University of Cincinnati.

He entered the Mayo Foundation as a Fellow, October 1, 1932, and became assistant professor of pathology of the Mayo Foundation in 1941.

In service, Lieutenant Commander Cragg was pathologist at the Naval Hospital at Corona, California. He was then assigned to duty at the Naval Advance Base Training Section at San Bruno, California, and was later made chief pathologist at the Naval Hospital at Mare Island. His entire service to the Navy was performed with outstanding ability and skill, and he gave unstintingly of his time to many civilian activities at Vallejo.

ROBERT S. FORBES

Dr. Robert S. Forbes of Duluth, Minnesota, passed away April 9, 1945, at the age of fifty-eight. He was born in Saint Paul, July 8, 1886, attended Central High School in Duluth, and, after taking two years of pre-medical work at the University of Minnesota, graduated from the medical school of the University of Pennsylvania in 1910. He interned at the St. Christopher and Presbyterian Hospitals, Philadelphia, from 1910 until

(Continued on Page 376)

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Tablets Penicillin Calcium Squibb provide 20,000 units, making oral therapy feasible for many conditions which heretofore could be treated only by repeated parenteral injections.

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IN MEMORIAM

ROBERT S. FORBES

(Continued from Page 374)

1913. In 1922 he took postgraduate work at the Northwestern Postgraduate School, and in 1925 at Vienna.

He was a member of the St. Louis County Medical Society, the Minnesota State and American Medical Associations, and the American College of Surgeons. He was a Scottish Rite Mason and member of the Shrine, and belonged to the Duluth Athletic Club and the Northern Country Club.

Dr. Forbes is survived by his widow, a daughter, Betty, and one brother, Mason M. Forbes of Carmel, California.

T. J. GAFFNEY

Dr. T. J. Gaffney of Lakeville, Minnesota, died November 27, 1945. Born in Minneapolis August 7, 1873, he obtained his M.D. at the University of Minnesota.

After practicing in Minneapolis a year or two he married Madeline Keller of Minneapolis and moved to Lakeville. He is survived by his widow, a brother John and a sister Mary, both of Minneapolis.

EDWIN LESLIE GARDNER

"The life of the dead consists in being present in the minds of the living."—CICERO.

Dr. E. L. Gardner died at his home January 29, 1946,

at the age of fifty-nine years, following a two-year illness.

Edwin Leslie Gardner, son of William C. and Eva Gardner, was born August 2, 1886, in Jacksonville, Illinois. His high school education was received at Belmont Military Academy, Belmont, California. He entered the University of Minnesota in 1906, and after two years in the College of Science, Literature, and Arts, entered the Medical School, and was graduated in 1912. He was a member of Nu Sigma Nu, and Alpha Omega Alpha. He held first rank in a class of thirty, and was awarded the Bell prize in physical diagnosis. He served an internship at the Elliott Memorial Hospital and subsequently became assistant to Dr. J. W. Bell, after which he started his career in his chosen specialty—internal medicine.

His society memberships included: Hennepin County Medical Society (president 1930), Minnesota State Medical Society (editing and publishing committee of Minnesota Medicine), American Medical Association, Minnesota Pathological Society (president), Minneapolis Clinical Club (president), Minnesota Academy of Medicine (secretary), Minnesota Society of Internal Medicine (president), American College of Physicians. He was a member of the faculty of the University of Minnesota Medical School, and was attending physician at the Minneapolis General Hospital from 1914 to 1926.

At various times he was on the staff of Glen Lake Sanatorium, St. Mary's, Eitel, Asbury and Northwestern Hospitals. He was associated with Drs. L. S. Ylvisaker,

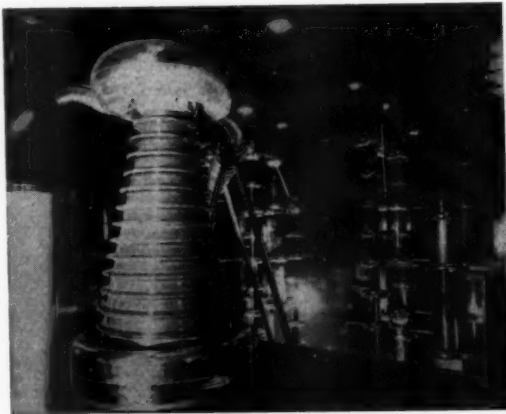
(Continued on Page 378)

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EDWIN LESLIE GARDNER

(Continued from Page 376)

Robert Kennecott, Paul Rowe, Lewis Daniels, Willard White, Charles A. Hallberg, R. S. Ylvisaker, and the writer. He was a member of Hennepin Avenue Methodist Church, the University Club, and the Professional Men's Club.

He was much the same, both as an undergraduate and as a practitioner, always serious minded, and with a singleness of purpose. Had he been born a few decades earlier he would have been known as a pioneer, possessing that industry and diligence characteristic of the self-made man. His secret of life was work. It was a habit so ingrained that it brought him the respect of his teachers and confreres, and a large clientele. When later he took up the avocations of photography and music he followed these in the same arduous way that he applied to medicine. In fact, it is not only conceivable but more than likely that this not unmixed virtue contributed to his demise at an earlier time than would otherwise have been so.

In the words of Wm. Osler: "Work not only has been the touchstone of progress but it is the measure of success in everyday life."—T. A. PEPPARD, M.D.

PROSPER ERNEST SHEPPARD

Dr. Ernest Sheppard, for fifty-three years a practicing physician in Hutchinson, Minnesota, passed away

February 28, 1946, in his eighty-third year.

Prosper Ernest Sheppard was born at Cannon Falls, Minnesota, March 10, 1862. When he was four years old his parents moved to Lake Allie, Renville County, where he received his early schooling.

Later he attended school in Hutchinson and then at Mankato, where he graduated from high school. He then enrolled in the University School of Medicine from which he graduated in 1891.

His first practice was in the town of Waconia, Carver County, in the year 1891. In 1892 he was united in marriage with Miss Gertrude Walker of Mankato, who died in 1895 leaving an infant daughter Agnes (now Mrs. F. L. Sheppard).

In 1892 he gave up his practice at Waconia and came to Hutchinson where he has since resided and practiced medicine with the exception of a year of leave in 1902-1903, during which he made a trip around the world, with a stop-off in foreign medical schools for postgraduate work.

In 1910 he was united in marriage to Miss Grace Goodnow, daughter of one of Hutchinson's pioneer families. To them were born two sons: Dr. Charles G. Sheppard and Warren Ernest Sheppard. Dr. Sheppard was a member of the McLeod County Medical Society and the Minnesota State and American Medical Associations.

Dr. Sheppard is survived by his widow, his daughter Agnes, his two sons and three grandchildren.



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◆ Of General Interest ◆

Dr. John B. Erich, of the Mayo Clinic, was guest speaker at the March meeting of the Cerro Gordo County Medical Society held in Mason City, Iowa.

* * *

Dr. Vincent Ryding, of Minneapolis, has entered practice at Howard Lake, where he has leased the offices recently vacated by Dr. David H. Rolig.

* * *

Dr. Lealdes McK. Eaton, of the Mayo Clinic, has been on a clinical trip which included visits to the Johns Hopkins Hospital in Baltimore and the Edgewood Arsenal, Maryland.

* * *

Dr. and Mrs. Byron O. Mork, Jr., of Worthington, spent March and part of April vacationing in and around Santa Monica, California, where they went by plane.

* * *

Dr. Donald Houston has returned to his practice at Park Rapids from three and a half years in the Navy. Dr. Houston, a lieutenant commander, was on duty in the South Pacific for two years.

* * *

Dr. Robert Ramsey is associated in practice with Dr. Frank E. Burch at 424 Hamm Building, Saint Paul, following his discharge from the Royal Canadian Air Force, in which as squadron leader he acted as consultant in ophthalmology.

* * *

Dr. Gerald Knutson, formerly in practice at Thief River Falls, will open offices in Hallock as soon as he can secure suitable quarters. At the time of his induction in the Army Medical Corps Dr. Knutson was located at Greenbush.

* * *

Dr. Robert Demo, who was in residence at the Rochester General Hospital when inducted into military service, is now associated with the Surgical and Medical Clinic at Albert Lea. Dr. Demo was on duty in the Pacific Theatre for twenty-eight months.

* * *

The Veterans Administration has announced that Dr. Ralph Ghormley, orthopedic surgeon at the Mayo Clinic, has accepted the position as head of the orthopedic surgery section, professional services division of the Veterans Hospital in Minneapolis.

* * *

Dr. Everett R. Youngren is constructing a new medical center in the Payne Avenue district in Saint Paul. Consisting of fifteen rooms, it will include a department for tonsillectomies, dental facilities and the latest x-ray and diagnostic equipment.

* * *

Dr. Walter C. Alvarez, of the Mayo Clinic, has been in Hartford Connecticut, where he gave two addresses

before the Hartford Medical Society. Dr. Alvarez' subjects were "Small Usually Unrecognized Strokes—a Common Disease," and "What is Wrong with Dispeptics whose Findings are All Negative?"

* * *

Dr. H. F. Schrockenstein of Saint Paul has received his discharge from the Navy, where he served as a lieutenant commander at the Special Augmented Hospital No. 4 on Okinawa. He is at present taking a course in Basic Sciences at the University of Minnesota Medical School.

* * *

Dr. Frank Adair, Saint Paul, who as a lieutenant commander in the Navy, served for twenty months in the Pacific Theatre and a later assignment in San Diego, California, was discharged on January 18, 1946. Dr. Adair has opened offices in the Lowry Medical Arts Building, where he will specialize in diseases of the eye, ear, nose and throat.

* * *

Dr. Elmer Paulson, who has been in the X-ray Department of the Army Hospital at Portland, Oregon, for the past three and a half years, has been discharged and has resumed his practice at Elbow Lake in association with Drs. Lester and E. Lillian Parsons. Just prior to his release from service, Dr. Paulson was promoted to the rank of major.

* * *

Dr. Arthur J. Henderson, of North Saint Paul, has been appointed deputy coroner for North Saint Paul and immediate vicinity by Dr. Carl A. Ingerson, coroner of Ramsey County. Previously, when the services of a coroner were required in the community, it was necessary to call one from either Saint Paul or White Bear.

* * *

Dr. Edward F. Burch, Saint Paul, has returned from service and has resumed the practice of ophthalmology in association with his father, Dr. Frank E. Burch, at 424 Hamm Building, Saint Paul. During his service, Dr. Burch was stationed at O'Reilly General Hospital, Springfield, Missouri, where he was executive officer and eventually commanding officer with the rank of colonel.

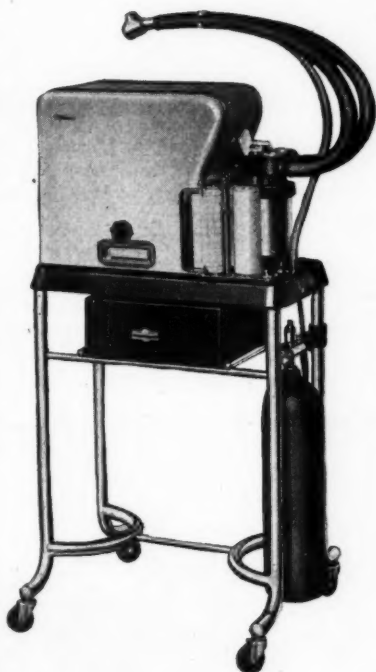
* * *

Discharged after forty-four months of service, Dr. Edward Colp, a commander in the Navy, has resumed his medical practice in Robbinsdale, with temporary offices at 4197 West Broadway. Dr. Colp was in active duty in the New Hebrides, South Pacific, for twenty-two months. During his final months of service he was senior medical officer at Wold-Chamberlain Field.

(Continued on Page 382)

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OF GENERAL INTEREST

(Continued from Page 380)

Dr. Hjalmar E. Mortensbak, who took over Dr. Howard A. Vogel's practice in New Ulm, while the latter was in military service, has moved with his family to Great Falls, Montana, where he has purchased the practice of Dr. Fred Andrews, now retired.

Dr. Mortensbak was a member of the Nicollet Clinic in Minneapolis just prior to his going to New Ulm and had formerly practiced at Hanska for about six years.

* * *

Under the sponsorship of the American Committee for Yugoslav Relief, Dr. Robert Neubauer, a former medical officer in the Yugoslav Army and a member of the Yugoslav Red Cross Delegation, addressed medical students and staff at the Minnesota University on March 4. Dr. Neubauer, who worked in the underground hospitals and organized medical services for partisan fighters during the war, discussed medical problems in Yugoslavia.

* * *

Shortly before the expiration of his terminal leave on March 1, Dr. Joseph Berkson, head of the Section on Biometry and Medical Statistics at the Mayo Clinic, was awarded the Legion of Merit for "having contributed immeasurably to the advancement of medical statistics in developing new methods of presenting and interpreting statistical data as applied to Army Air Force matters." Dr. Berkson, with the rank of colonel,

served as chief of the Statistics Division, Office of the Air Surgeon, Headquarters Army Air Forces.

* * *

Dr. James R. Weir, formerly of Minneapolis, has moved with his wife and two small children to Goodhue, where he has opened offices for general practice. Dr. Weir is a graduate of Wheaton College, Illinois, where he took his B.A. and the University of Illinois Medical School. He interned at St. Barnabas Hospital in Minneapolis, and for the past eighteen months was associated with Dr. Owen F. Robbins, Minneapolis, specializing in obstetrics.

* * *

Dr. Charles F. Brigham, Jr., who before joining the Army Medical Corps in July, 1942, was in practice in Saint Paul, is now associated with the St. Cloud Clinic.

Dr. Brigham is the son of Dr. C. F. Brigham, of St. Cloud. He graduated from St. John's University in 1937 and the University of Minnesota Medical School in 1941. While in the Army he served practically all of the time at 262nd General Hospital and the Gorgus Hospital in the Panama.

* * *

Dr. Anthony H. Field, a captain in the Army Medical Corps for twenty-three months, has returned to his position as physician and surgeon at the Sanford Hospital in Farmington. Dr. Field was in England

(Continued on Page 384)

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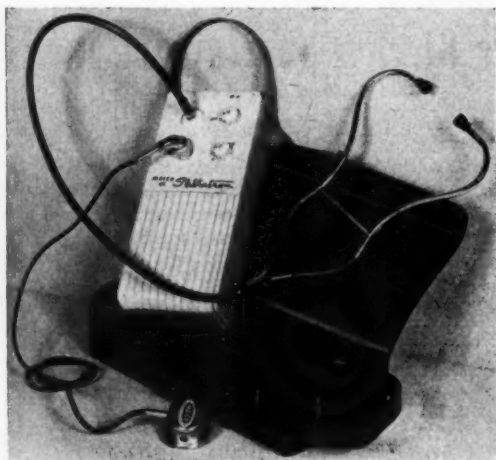
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OF GENERAL INTEREST

(Continued from Page 382)

with the 109th Hospital unit for eleven months. Returned to this country in June, 1945, he was assigned to the Separation Center at Camp Grant, Illinois, where he served until his discharge on January 16, 1945. Five days later he had resumed his practice in Farmington.

Following the arrival in Aitkin of Dr. F. C. Closuit, Dr. Irvin L. Mitby's new assistant, Dr. Mitby left for Minneapolis for several weeks' work in diseases of the eye under Dr. Robert Tracht at the University of Minnesota School of Medicine.

Dr. Closuit, who was recently discharged from the Army Medical Corps with the rank of major, graduated from the University in 1941.

Mrs. Closuit, a medical technician before her marriage, will have charge of the laboratory and x-ray work in the office.

After forty years of practice in Harmony, Dr. Charles M. Tierney has sold his practice to Dr. Alfred H. Wolf, of Minneapolis, and is retiring because of ill health.

Dr. Wolf was born in Chatfield, but his youth was spent in La Crosse, Wisconsin, where his parents moved when he was two months old. He is a graduate of the University of Wisconsin and the Medical School of the University of Pennsylvania. He interned at

St. Mary's Hospital in Minneapolis and was inducted into the Army Medical Corps in October, 1944.

Dr. Donald Hastings, successor to Dr. J. Charnley McKinley as chairman of the Department of Psychiatry and Neurology at the University of Minnesota, assumed his duties on April 1. Dr. Hastings, an alumnus of the University of Wisconsin, was chief psychiatrist of the Eighth Air Force during the war. Formerly, he was a member of the staffs of the University of Pennsylvania Medical School and the Women's Medical College in Philadelphia.

Dr. Burtrum C. Schiele, psychiatrist, and Dr. Abe B. Baker, neurologist, are Dr. Hastings' associates.

A two-day institute on Cancer Education was held in Duluth on March 12 and 14 under sponsorship of the Duluth Division of the Minnesota Cancer Society, the Duluth Community Health Committee and the University of Minnesota Extension Division.

Dr. Fredolph H. Magney, of Duluth, presided at the first meeting at the Hotel Spalding, when Dr. William A. O'Brien, professor of preventive medicine at the University of Minnesota, spoke on "The Nature of Cancer."

There were two sessions on March 14; one at the Hotel Spalding at two o'clock in the afternoon and the other at the Chamber of Commerce at eight P.M.



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OF GENERAL INTEREST

The speakers at these sessions were Dr. Russell J. Moe, Dr. M. V. Knoll, Dr. Arthur H. Wells and Dr. Merriam G. Fredricks.

* * *

Dr. Philip A. Kees, formerly of Saint Paul, a graduate of the University of Minnesota, where he took his science degree, and of the Pennsylvania University Medical School, has resumed his practice at Springfield, Massachusetts, after four years in the Army. Dr. Kees also did research and studied orthopedic surgery at the Mayo Clinic. His war service included duty as chief of surgery at air base hospitals, orthopedic surgeon at an evacuation hospital and operating surgeon of a paratroop combat team. He was wounded three times and was awarded the Purple Heart with bronze clusters, the Bronze Star and the Silver Star.

* * *

After more than four years in the Navy, Dr. James P. O'Keefe has engaged in the practice of surgery and medicine at St. Cloud in association with Dr. Francis J. Schatz.

Dr. O'Keefe is a graduate of St. John's University and Marquette Medical School, where he finished in 1940, when he was assigned to the Naval Hospital at Baltimore Maryland, and later to Birmingham, Alabama. From there he was sent to Pensacola, Florida, where he graduated as a flight surgeon. In the closing months of the war he was attached to a B-25 Marine Bombing Squadron in the Pacific.

* * *

After fifty years of service to Balaton and the surrounding community, Dr. Charles Germa has closed his offices and has written *finis* to his medical practice there.

Dr. Germa opened his offices in Balaton in 1895 shortly after graduating from the University of Minnesota Medical School and, except for a brief interval when he was in the armed forces during World War I, he has been in continuous practice there ever since. Beginning when he was twenty-three, the story of Dr. Germa's practice is a saga of the age of oxen, which were in common use, when he first went to Balaton, through the machine age into the era of airplane transportation.

Dr. and Mrs. Germa are closing their home and moving away from Balaton.

* * *

Speakers at the annual conference of the thirty-four county and district medical societies of the Minnesota Medical Association held in Minneapolis on March 2 included Dr. John R. Paine, of the staff of the University Hospital and Dr. Richard Hulseick, of Saint Paul, who talked on "Medical Care for Veterans"; Dr. Arthur H. Wells, pathologist, Duluth, Dr. Berton J. Branton, Willmar, and Dr. Alfred W. Adson, of the Mayo Clinic, and Dr. Albert J. Chesley, secretary of the Minnesota State Health Department, who explained the distribution of the blood plasma which was recently presented to the State by the American Red Cross. Ray Amberg, superintendent of the Uni-

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OF GENERAL INTEREST

versity Hospital, reviewed the progress of the State hospital survey, and Carl D. Hibbard represented the Veterans Administration.

* * *

The return of Dr. Joseph Emon to his practice in Farmington has enabled his brother and associate, Dr. Albert J. Emon, to get away for a much-needed vacation, which he is spending in Oklahoma and California.

Dr. Joseph Emon, a major in the Army Medical Corps, was in service for fifty-one months. His first assignment was at Ft. Ord, California, where he had charge of a medical clearing station for eleven months. From there he was sent to Alaska as commanding officer of the station hospital there and also post surgeon at Bethel and Seward. Returned to the States in February, 1944, Dr. Emon was placed in charge of the Medical Technicians' School, Billings General Hospital, Ft. Benjamin Harrison, Indiana. Later he was assigned to Camp Atterbury Convalescent Hospital as battalion surgeon, where he remained until his terminal leave.

* * *

Recent returnees from military service to the Mayo Clinic include Dr. S. B. Lovelady, Dr. Hugh R. Butt, and Dr. Lucian A. Smith.

Dr. Lovelady, a lieutenant colonel in the Army, entered service on August 4, 1942. He was executive officer of the 182nd General Hospital in England for approximately eighteen months, when he was returned to this country and assigned to Camp Grant, Illinois,

where he was in charge of officers of the medical division of the separation center. Dr. Lovelady is a consultant in obstetrics and gynecology at the Clinic.

Dr. Smith, a major in the Army, was inducted in June, 1943. He served overseas as a general medical officer with the 237th Station Hospital in New Guinea and Luzon, and was awarded the Bronze Star for meritorious service.

Dr. Butt, a lieutenant commander in the Navy, entered service on July 1, 1942. He was stationed at the naval hospital at Corona, California, for two and a half years before serving overseas on the hospital ship, *USS Repose* for nine months in the China Theatre. Although Dr. Butt's terminal leave did not expire until April 12, he resumed his work at the Clinic six weeks or more ago.

Both Dr. Smith and Dr. Butt are in the general medical section at the Clinic.

* * *

Dr. Winchell McK. Craig, the only rear admiral in the USNR Medical Corps, whose terminal leave expired on April 8, has resumed his work in neuro-surgery at the Mayo Clinic. Dr. Craig is also a professor of neuro-surgery at the Mayo Foundation Graduate School at the University of Minnesota.

For the six months following his entrance into active service on December 26, 1941, when he was made commander of one of the two units organized at the Mayo Clinic, Dr. Craig was stationed at the Naval Hospital in Corona, California. From there he was



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OF GENERAL INTEREST

transferred to the National Naval Medical Center in Bethesda, Maryland, where he served as chief of surgery until September, 1945.

Dr. Craig made three overseas special missions. The first took him to England, where he landed on D-Day June 6, 1944. As consultant surgeon to the naval forces in the ETO, he made an inspection tour of facilities in England, France and the Normandy peninsula. In the fall of 1944 he was sent by the Surgeon General of the Navy to the Pacific Theatre.

In September and October, 1945, Dr. Craig made a 25,000-mile flight throughout the Pacific, covering Pearl Harbor, Guam, the Marshall Islands and the Philippines on a survey to determine postwar requirements in medical activities and medical education in the Navy. It was the completion of this mission which brought the promotion to rear admiral, the first time this rank has ever been conferred on a Medical Reserve officer. From November until his release from military duty, Dr. Craig was in the Professional Division of the Bureau of Surgery and Medicine in Washington, D. C., where he was engaged in establishing postwar graduate training in naval hospitals.

* * *

The Hennepin County Medical Society has announced the return from military service to practice of the following physicians:

Dr. Nathaniel J. Berkwitz, psychiatrist, with offices in the Medical Arts Building. A lieutenant colonel, Dr. Berkwitz had been in the Army Medical Corps since 1942.

Dr. David A. Burlingame has resumed his practice in his offices in the Medical Arts Building. A major in the Army, he entered service in November, 1942.

Dr. S. Paul Ehrlich has returned to the practice of surgery with offices in the Medical Arts Building. A commander in the Navy, Dr. Ehrlich had twenty-nine months of service.

Dr. Joseph C. Giere, urologist, has reopened his offices in the Metropolitan Bank Building. Dr. Giere was inducted into service in October, 1943.

Dr. Fred C. Holzapfel has resumed general practice at 1101 West Broadway. Dr. Holzapfel had been in service since March, 1944.

Dr. Gerald M. Koepcke has resumed his practice in diseases of the eye, ear, nose and throat, at 801 Physicians and Surgeons Building. With the rank of commander Dr. Koepcke was in the Navy for thirty months.

Dr. Frank Larsen has opened his offices for general practice at 1527 East Lake Street. A lieutenant commander in the Navy, Dr. Larsen entered service in October, 1942.

Dr. Henry Michel has resumed general practice with offices at 5004½ Xerxes Avenue. A captain in the Army, Dr. Michel was inducted into service in January, 1943.

Dr. John T. Pewters, obstetrician, has returned to his offices in the Donaldson Building. A major in the Army, Dr. Pewters was in service for thirty-six months.

Dr. Robert Priest has resumed his practice in dis-

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GYNECOLOGY—Two-week Intensive Course starting May 20, June 17. One-week Personal Course in Vaginal Approach to Pelvic Surgery starting May 13, June 10.

OBSTETRICS—Two-week Intensive Course starting May 6 and June 3.

MEDICINE—Two-week Intensive Course starting May 13.

ELECTROCARDIOGRAPHY AND HEART DISEASE—Two-week Intensive Course starting August 5.

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eases of ear, nose and throat in his offices in the Medical Arts Building. Dr. Priest entered service in August, 1942, and was a major in the Army.

Dr. Melvin B. Synikin, has re-opened his offices in the Medical Arts Building for the practice of obstetrics and gynecology. A captain in the Army, Dr. Synikin entered service in August, 1943.

HOSPITAL NEWS

Dr. Francis Fowler Callahan, superintendent of the State Tuberculosis Sanatorium at Walker, was the guest speaker at the annual meeting of the Isanti County Public Health Service held at Stanchfield on February 5.

* * *

Our Lady of Mercy Hospital in Alexandria is one of the seventy-five hospitals listed as approved in the twenty-eighth annual survey made by the American College of Surgeons.

* * *

St. Olaf's Hospital in Austin has engaged C. W. Hildreth as business manager. Mr. Hildreth was recently discharged from military service, where he was assigned to the Medical Administrative Corps.

* * *

Dr. John Edward Power was elected chief of staff of St. Mary's Hospital in Duluth at the annual staff dinner given by the Sisters of St. Benedict on February 7. Other department chiefs chosen at the same time were: Dr. N. R. Gowan, chief of staff elect; Dr. Frank Cole, anesthesiology; Dr. Anthony J. Spang, staff secretary; Dr. John A. Winter, eye, ear, nose and throat; Dr. Richard Bardon, medicine; Dr. Russel J. Moe, obstetrics; Dr. Mark H. Tibbetts, orthopedics; and Dr. Murdoch A. Nicholson, orthopedics.

* * *

Dr. Virgil E. Quanstrom was elected chief of staff of St. Joseph's Hospital, Brainerd, at the annual meeting and dinner given by the Sisters of St. Benedict. Dr. William E. Fitzsimons was made vice chief, and Dr. John Thabes, Jr., secretary and treasurer of the staff.

Guest speakers at the dinner were Dr. Keith R. Fawcett, of the Duluth Clinic, who discussed "Sinus Thrombosis" and Dr. John Rukavina, of the staff of St. Mary's Hospital, Duluth, who spoke on "Plasma Protein."

* * *

Dr. Harry Johnson was elected president of the staff of St. Andrew's Hospital in Minneapolis at the annual staff election. Dr. Johnson recently returned from two years' military service in the South Pacific. Dr. J. S. Blumenthal was made vice president, and Dr. Ronald E. Risch secretary-treasurer.

Dr. Irving Preine was elected secretary-treasurer of the Board of Trustees of the hospital at their meeting on the same date.

* * *

Under a Veterans Administration plan the Veterans' Hospital in Minneapolis will be staffed with 146 physicians, seventy-eight of whom—members of the faculty of the University of Minnesota Medical School—will officiate in consultant capacity: Actual care will be the

BOOK REVIEWS

responsibility of the other seventy-eight, all graduate doctors from the University, who will work full time under a fellowship system. Consultants will make regular periodic visits to the hospital and will be on call in case of emergencies. So far, twenty-two consultants and senior consultants and seven fellows have been approved.

* * *

Dr. Miland E. Knapp was elected chief of staff of St. Barnabas Hospital, Minneapolis, at the annual meeting of the medical staff. Dr. Knapp is president of the American Congress of Physical Medicine and Clinical Professor of Physical Medicine at the University of Minnesota.

Other officers chosen at the same time were Dr. Joseph T. Spano, vice chairman; and Dr. William E. Proffitt, secretary. Dr. Carl O. Rice, retiring chief of staff, and Dr. H. D. Giessner were appointed members of the executive committee.

BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical Libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

THE CARE OF THE AGED (GERIATRICS). Malford W. Thewlis, M.D. 5th ed. 500 pages. Illus. Price \$8.00. St. Louis: C. V. Mosby Co., 1946.

The growing interest in the subject of geriatrics is attested by the circumstance that this very worth-while book from an author well qualified to write it is now in its fifth edition. Comparing this with the third edition one sees that there has been some fruitful concentration: the number of chapters has been reduced from thirty-eight to thirty-three and the illustrations from forty-four to thirty-five. The author introduces some new terms: "Geratology": geros, old age; logos, study thereof. He would thus introduce a term somewhat distinct from "Gerontology," the study of the aging process itself. Another Greek root is used to cover the field of hygiene and associated features. Thus the term "Geroconia" is coined. Under this heading, the author outlines very interesting items leading up to the general cultivation of habits and hobbies.

In Part IV the author then systematizes the difficulties of the aged in terms of organs, both anatomically and physiologically. After the various chapters some of the older references are left out and certain others added. I approve, under the dietary schedule the abandonment of many listed menus. Geriatric nursing, in Chapter XII, is especially well outlined.

In any book for review one looks for items yielding what we may call "challenges and chuckles." For example, in a very good chapter on the relationship between disorders, diets and obesity, there is this significant statement: "In health there is the greater danger from the attendance upon the individual of a good cook than of a poor physician when he is sick"—or, at least, that is the general idea. Then the author comments upon the number of elderly women who smoke equally as vigorously as the men, and who are inclined during wakeful periods to get up and stumble around, seeking the sedation of a smoke. One elderly man set fire to his surroundings three times, but still insisted on smoking the weed.

The author has very sane ideas in regard to focal infection and the folly of wasting many useful teeth, just because the aging person accumulates classis squeaks. The book does not stress sufficiently protein sufficiency and simpler ways to maintain it in the extremity imposed by chronic illness, mental decay, malignancy and gastro-intestinal imbalance. I heartily recommend the book.

E. S. TUOHY, M.D.

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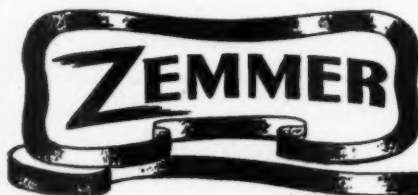
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